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UNCONVENTIONAL ASSISTED RECOVERY (UAR): HISTORICAL CASE STUDY ANALYSIS AND QUANTITATIVE FEASIBILITY ASSESSMENT

by

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December 2001

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(1) Developing a historical perspective of similar missions through case study analysis to determine, via controlled comparison, the key independent variables that determine the success of ground-based SOF recovery operations, and by
(2) Conducting quantitative modeling of UAR to determine, through a range of numerically based conditions, a range of feasibility and doctrinal implications for UAR.

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UNCONVENTIONAL ASSISTED RECOVERY (UAR): HISTORICAL CASE STUDY ANALYSIS AND QUANTITATIVE FEASIBILITY ASSESSMENT

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Submitted in partial fulfillment of the
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ABSTRACT

During the Gulf War, 34 Coalition pilots were shot down, yet only 6 were recovered by conventional CSAR. Consequently, SOF planners began to consider the impact of integrated air defenses upon personnel recovery and to consider a more proactive method of recovery. While serving as a member of the SOCCENT Unconventional Warfare Working Group and as the lead planner for the first UAR training program and exercise for 3rd Special Forces Group, I observed that there was little consideration of similar historical operations and that operators were skeptical of UAR. The purpose of this thesis is to assist the special operations community with the development of doctrine for UAR and to offer SOF commanders a feasibility assessment tool. This purpose was achieved by:

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I. INTRODUCTION

During the Gulf War, thirty-four Coalition pilots were shot down in Iraq. Despite near-total allied air superiority, as well as the relatively close proximity of recovery forces on stand-by in friendly territory, only six of these pilots were recovered by conventional combat search and rescue (CSAR). The remainder was forced to endure capture, captivity, and some degree of torture, harassment, or exploitation before eventually being repatriated at the end of the conflict. After the conclusion of the Gulf War, special operations forces (SOF) planners began to consider the impact of high-threat integrated air defenses upon personnel recovery, and came to the conclusion that consideration should be given to a more proactive method of recovery. Early in 1998, SOCCENT formed an Unconventional Warfare Working Group (UWWG) to establish the training requirements for a mission profile, Unconventional Assisted Recovery (UAR), which, despite being a part of Personnel Recovery (PR) doctrine for years, had never been fully and officially articulated within SOF doctrine. On 29 April 1999, USAJFKSWCS DOTD published a white paper detailing the "Unconventional Assisted Recovery Team Tactics, Techniques, and Procedures." As an original member of the UWWG and the lead planner for the first UAR training program and field training exercise for 3rd Special Forces Group, I made two observations during this initial development of UAR:

(1) SOF planners involved with UAR were approaching this proposed mission profile with no reference to or deliberate discussion of similar historical operations, and
(2) The operators chosen to study and field test UAR were much more pessimistic about feasibility and survivability than were the planners.

My initial research led to the discovery that UAR was by no means a new mission profile: the Office of Strategic Services (OSS) had very deliberately conducted the same type of mission in occupied Europe and in the Chinese-Burma-India (CBI) Theater during World War II, and the UN Partisan Infantry Korea (UNPIK) had done the same in North Korea during the early 1950's. To have a complete understanding of what UAR doctrine should encompass, it would only seem prudent that the difficulties encountered and the lessons learned by these historical organizations must be collated and analyzed. Regarding the previously noted operator pessimism, or, as I have come to call it, the 'Private Ryan Syndrome,' I will address the feasibility of the UAR mission profile

throughout a range of operational conditions by conducting quantitative campaign analysis, specifically through the application of survival circulation theory.

Consequently, the purpose of this thesis will be to assist the SOF community with the development of doctrine for UAR and to offer SOF commanders a feasibility assessment tool. To accomplish this purpose, this paper will achieve two primary goals:

(1) Develop a historical perspective of similar missions through case study analysis to determine, by way of controlled comparison, the key independent variables in an operational environment that most directly impact upon ground-based unconventional recovery operations in hostile territory, and
(2) Conduct quantitative campaign modeling and analysis of the pertinent aspects of UAR, as dictated by the discoveries made during the historical case study analysis, to determine the variance between the dependent and independent variables through a range of numerically based conditions where UAR may be feasible, if at all.

II. UNDERSTANDING THE PROPOSED MISSION PROFILE OF UAR

A. COMPARISON OF CSAR AND UAR

The newest update to Joint Publication 3.50-2 defines personnel recovery (PR) as

> the aggregation of military, civilian, and political efforts to recover captured, detained, evading, isolated or missing personnel from uncertain or hostile environments and denied areas. PR may occur through military action, action by non-governmental organizations, other U.S. Government-approved action, and diplomatic initiatives, or through any combination of these options. Although PR may occur during non-combatant evacuation operations (NEO), NEO is not a subset of personnel recovery. (DoD Directive 2310.2, Para 3.1, Dec 22, 2000). PR is the umbrella term for search and rescue (SAR), combat search and rescue (CSAR), joint combat search and rescue (JCSAR), non-conventional assisted recovery (NAR) (which includes unconventional assisted recovery (UAR) and unconventional assisted recovery mechanisms), and survival, escape, resistance and evasion (SERE) for operations that are focused on the task of recovering captured, missing, isolated personnel and remains.

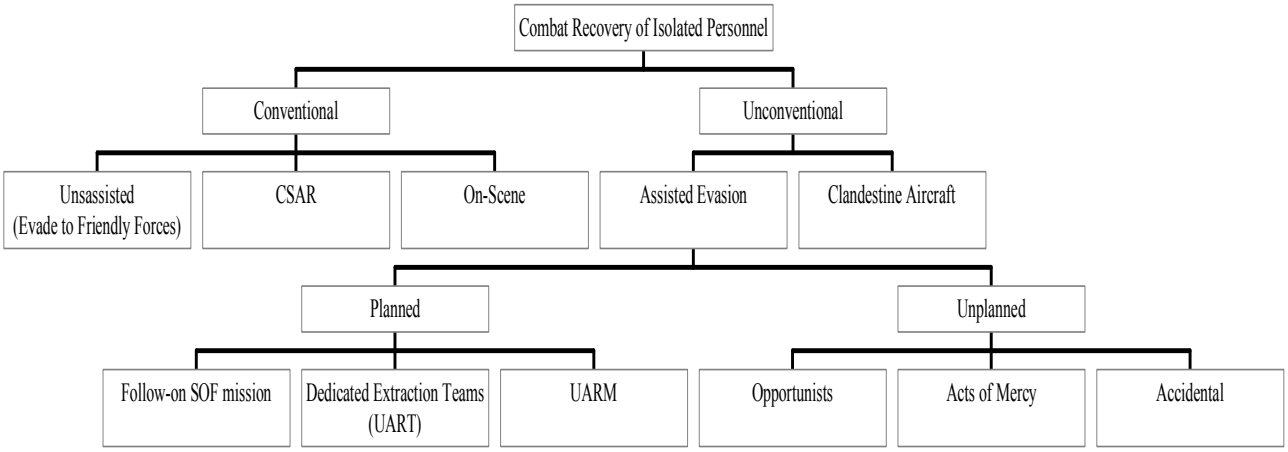

Figure 1. Categories of PR. (From: Introduction to Personnel Recovery)

Thus, within the Department of Defense and during conflict, active doctrinal options for the recovery of isolated personnel (IP) include CSAR (joint or single-service) and UAR. All other options in Figure 1 involve either unplanned assistance, immediate recovery by members of the IP's unit, or ad-hoc assistance provided by a SOF team acting on a follow-on, collateral tasking. Only CSAR and UAR deliberately consider deploying additional U.S. forces for the sole purpose of personnel recovery.

Both CSAR and UAR seek to achieve the same PR goals: locate, authenticate, recover, and return the IP to friendly control. To understand how UAR differs in execution from traditional CSAR, we will look at each in turn.

1. Combat Search and Rescue (CSAR)

Joint Publication 1-02 defines CSAR as "a specific task performed by rescue forces to effect the recovery of distressed personnel during wartime or contingency operations."

The first recorded instance of an organized and systematic CSAR program was during the Battle of Britain, when the German Luftwaffe utilized Heinkel He 59B-2 seaplanes to land in the English Channel and recover downed aircrews (Evans, 1999, p. 9). In the contemporary sense, CSAR is often a joint effort involving the use of fixed-wing and rotary-wing aircraft, as well as an accompanying ground force ranging in size from a few trained specialists to a platoon or more of combat troops who provide local security. Either conventional forces or SOF may be involved in the conduct of CSAR.

CSAR, while maintaining the advantage of operating from friendly territory, is generally a reactive response to an IP incident. Even if the forces assigned to conduct CSAR are pre-positioned to be in closer proximity to likely areas of operation, CSAR operations are normally organized and launched from a permissive environment, and therefore must penetrate enemy territory in order to locate and retrieve an IP.

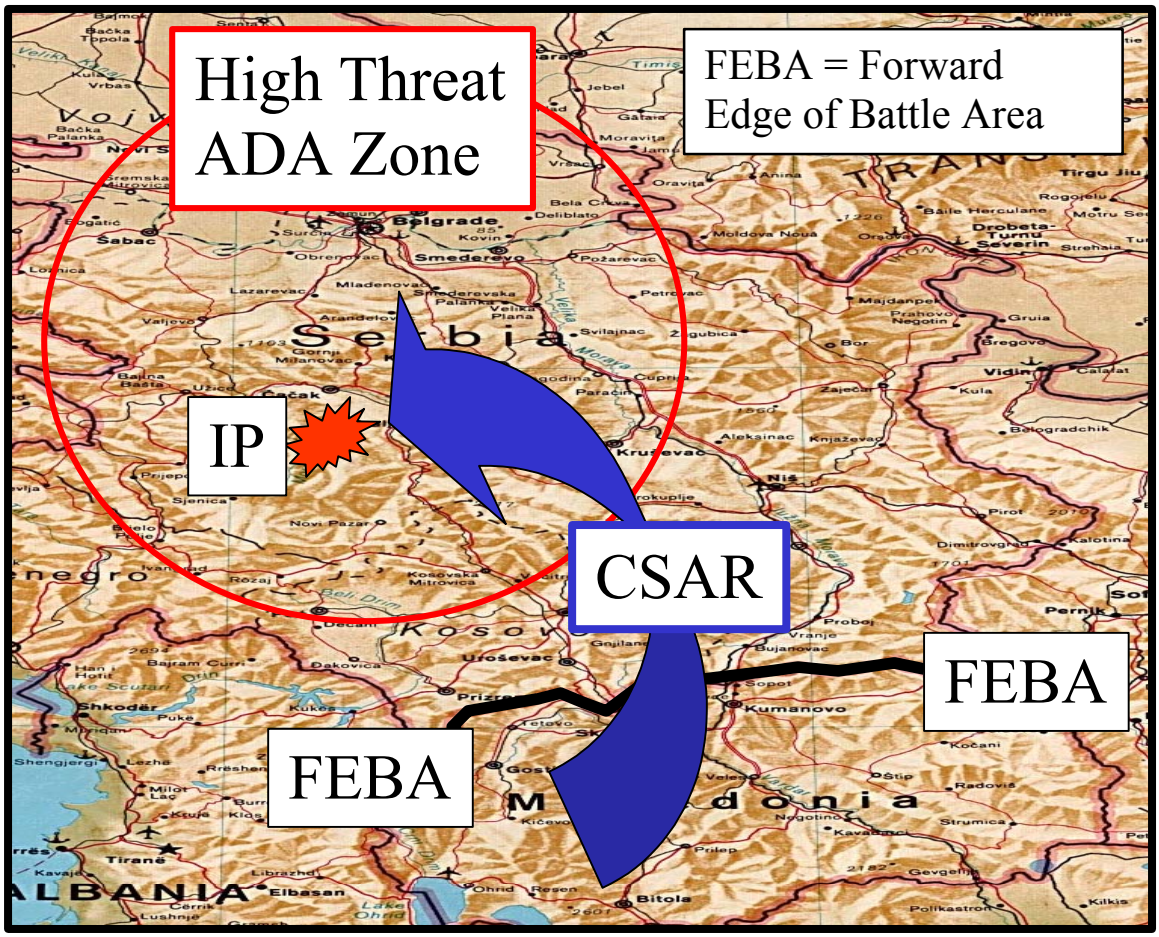

Figure 2. CSAR Graphic (After CIA World Factbook, 2001).

As a result, CSAR elements must usually confront the same array of threats that created the need for their employment. As noted in the introduction, the advent and proliferation of integrated air defenses, along with the advancement of man-portable surface to air missiles (SAM), has increased the risk for CSAR forces to the point where numerous demanding criteria must be met, especially regarding the location and status of the IP and the enemy threat, and significant assets and resources must be available before such a penetration can be contemplated. This need to gather intelligence and conduct some degree of planning after an incident that results in an IP, combined with the requirement to launch the mission and transit to the area of the IP, necessarily taxes one of CSAR most valuable assets, that of time. Even in cases of successful, single incident CSAR, such as that of Scott O'Grady in Bosnia, it may be many hours or days before a point-to-point CSAR can be launched. All of this offers an opponent numerous

opportunities to attempt to saturate the area around the IP with search elements, and/or the opportunity to establish an ambush for the incoming CSAR force.

2. Unconventional Assisted Recovery (UAR)

A recent DOD Directive defines UAR as:

> NAR [Non-Conventional Assisted Recovery] conducted by Special Operations Forces (SOF). (10 U.S.C. and evolving Joint and Service doctrine for SOF define their activities with regards to NAR as UAR). (DODI 2310.6, October 13, 2000, p. 2)

This same directive goes on to define Non-Conventional Assisted Recovery (NAR) as:

> All forms of personnel recovery conducted by an entity, group of entities, or organizations that are trained and directed to contact, authenticate, support, move, and exfiltrate U.S. military and other designated personnel from enemy-held or hostile areas to friendly control through established infrastructure or procedures. NAR includes unconventional assisted recovery. (DODI 2310.6, pp. 2-3)

In clearer terms, UAR is a DOD activity, while NAR may involve the participation of non-DOD agencies.

Having identified the need to conduct a military operation likely to result in one or more IP, such as a sustained air campaign, and having also identified an integrated air defense zone, or some other political consideration, that creates a high enough threat to be prohibitive with regards to conventional CSAR, UAR offers the opportunity to, in essence, work around the opponent's air defenses or other relevant threats. UAR seeks to be more proactive than CSAR by pre-positioning, in a clandestine manner, a SOF ground element in or immediately adjacent to an area where it is expected that one or more IP incidents will soon occur. This area of operations for UAR is known as a designated area of recovery, or DAR. In concept, infiltration into the DAR would occur some time prior to the commencement of the larger operations, usually an aerial bombing campaign, which would cause the IP. The SOF ground element, highly familiar with the DAR as a result of deliberate mission analysis, would infiltrate, generally by air, as close to the DAR as is feasible, then would finish the infiltration by ground, thus bypassing or avoiding the threats that would otherwise preclude CSAR. Once inside of the DAR, the UAR team (UART) would establish one or more hide sites and would await the notification that an IP is nearby. After moving to, locating, authenticating, and

safeguarding the IP, they would eventually either move the recovered IP by ground outside the DAR to a rotary-wing pickup zone, or they could pass the IP into an evasion mechanism.

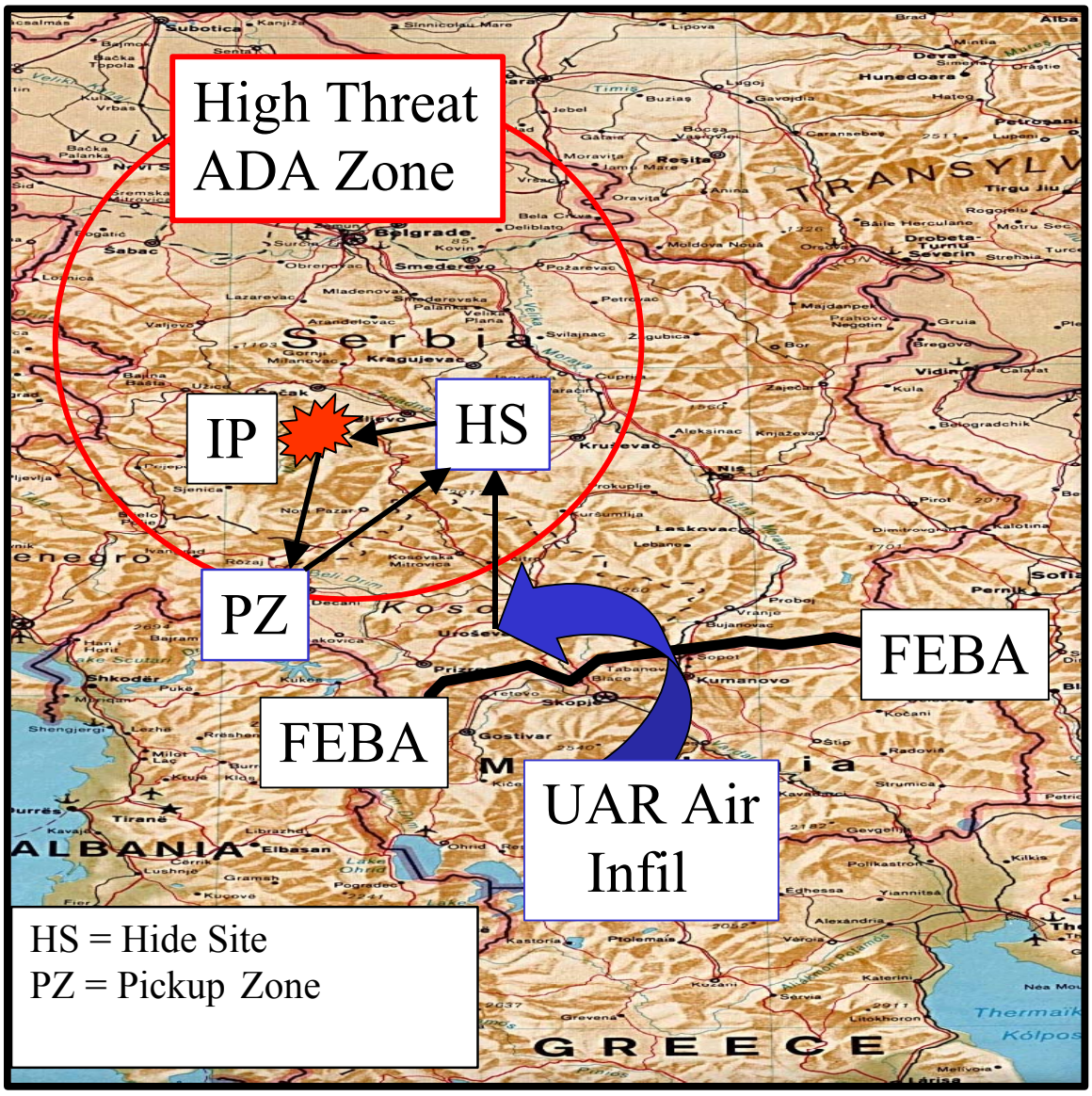

Figure 3. UAR Graphic (After CIA World Factbook, 2001).

Key to the concept of UAR is that, at this point in time, the mission of the UART is not over. Unlike CSAR, as a single recovery, point-to-point mission, the UAR concept calls for the SOF ground element to return, by ground movement, into the DAR and to remain in the area as long as the possibility of further IP exist. In this sense, UAR becomes very similar to unconventional warfare (UW), as opposed to SOF CSAR, which

is more comparable to a SOF direct action. This similarity to UW becomes potentially even more valid when we consider several options available to the UART.

In extremely hostile environments, the UART may be forced to operate in a completely clandestine manner. However, depending upon the disposition of the indigenous population, the UART may establish local contacts to gain various types of assistance. Such assistance could include the provision of intelligence, shelter, foodstuffs, and transportation. Additionally, the local population may be induced, by means of political or financial incentives, to assist in recovery efforts by delivering to or notifying the UART of any IP who have made contact with friendly civilians.

It also bears emphasizing that while a prohibitive air defense is the scenario most likely to incur the need to consider UAR, other factors may make UAR more attractive than CSAR. Contemporary strike aircraft have much longer ranges than do rotary-wing platforms. Combine this with the standard practice of conducting in-flight refueling only in friendly airspace, and one can envision a scenario where the likely location of a potential IP will simply be beyond the range of CSAR capabilities. Furthermore, environmental conditions, such as extreme cold or heat, may impact upon an IP's short-term survival prospects. If proper planning has occurred, UAR could be much more responsive in locating and safeguarding an IP. Finally, political considerations may dictate that it would be completely unacceptable for even one IP to fall into the hands of the opponent, thereby justifying putting at risk the members of the UART.

B. BALANCING THE POTENTIAL BENEFITS AND RISKS OF UAR

As has already been noted, UAR offers some interesting possibilities for bypassing a high-threat air defense, for extending the range of PR activities, for providing near-immediate life-sustaining support to lightly-equipped IP, and, under suitable circumstances, enlisting and directing the aid of sympathetic locals.

The risks of UAR cannot be easily separated from the very circumstances that create the benefits. By having forces in enemy territory prior to an actual IP incident, we are putting at risk additional troops who may not successfully recover even one IP. Even success may increase the threat to the UART, as unavoidably increased signature stemming from operating in a hostile area may lead to an increase in efforts to locate and eliminate the UART.

It is this dilemma that forms the basis for the hypothesis of this paper. In the past, what operating environment conditions led to successful UAR? The case studies, focusing on Detachment 101 in Burma and the 8240th Army Unit, later known as United Nations Partisan Infantry, Korea (UNPIK), off the coast of North Korea, will examine this question in order to determine the independent variables that most directly determine whether or not UAR will be successful. How long could a UART be expected to operate under a given set of conditions, and what is the maximum number of IP they could be expected to recover? Additionally, with regard to the 'Private Ryan Syndrome,' commanders may feel some reluctance to commit and put at risk a UART for the opportunity to recover only one, or merely a handful, of IP. What number of recovered IP would be worth the deployment of a UART, and how do we base this judgment on anything except intuition? The quantitative analysis portion of this paper will address this issue, using a probability-based survival circulation model, to determine the probable numbers of recovered IP, given a set of conditions, as well as the situational parameters where feasibility becomes infeasibility.

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III. HYPOTHESIS AND DEFINITIONS

A. DEFINITIONS

For the purposes of this thesis, the following definitions apply:

Successful UAR is defined as the continued ability of the UART to operate within its assigned area. It does not necessarily imply any degree of successful recovery of some number of IP, given that the expected IP incident(s) may never actually occur. Thus, I am concerned only with the ability of the UART to be able to maintain operational freedom of maneuver, and I am assuming that some sufficient minimum degree of tactical proficiency exists for the UART to perform as required in the case of individual IP recovery operations.

Conversely, then, UAR failure would consist of the development of a situation causing the UART to either be killed, captured, or forced to abort its mission and leave its assigned area of operations.

The sympathies of local non-combatants is relatively self-explanatory, but extends only to those sympathies that result in action, whether favorable or unfavorable to the UART, and thus exclude any private musings that are not sufficient to stir a local inhabitant to act either in support of or to the detriment of the UART. This independent variable includes the antecedent condition of a sufficient communications infrastructure. A local inhabitant who wishes to influence the success of the UART must have the ability to transmit his message in sufficient time to impact the conditions before they have changed and his information is no longer relevant.

The reaction capability of the opponent incorporates the antecedent conditions of terrain, communications, mobility, and leadership. This independent variable focuses solely on the ability of an opponent to project his search forces in a manner sufficiently rapid to create a situation that contributes to UAR failure.

Finally, the effective search density of the opponent also incorporates the antecedent conditions of terrain, communications, mobility, and leadership, as well as the additional factor of firepower. This independent variable addresses the ability of the opponent to mass sufficient manpower, or other technological search platforms, in an organized fashion sufficient to impact upon the success or failure of UAR.

B. HYPOTHESIS

It is the hypothesis of this paper that the success or failure of UAR is most directly dependent upon the three variables of (1) the sympathies of the local non-combatants, (2) the reaction capability of the opponent, and (3) the effective search density of the opponent.

In arriving at these three tentative independent variables, numerous other factors were considered. These other factors included terrain, firepower, mobility, communications, and leadership. Closer consideration, however, led me to the conclusion that these other factors either were antecedent conditions, in that they were important only in how they contributed to the three independent variables above, or that they were not unique to the mission of UAR, and thus held no more explanatory power for UAR than they would for any other military operation, or, finally, that they held no relevance for UAR.

All of these factors are important for any military mission. To claim that terrain, firepower, mobility, communications, or leadership is critical to UAR takes us no further in understanding what uniquely contributes to its potential success or failure. Additionally, terrain, a neutral factor that is simply taken advantage of by one side, both sides, or not at all, and mobility, a relative factor between the two sides, are important to this hypothesis only in how they contribute to the reaction capability of the opponent and his ability to effectively search for the UART. Finally, firepower is virtually a non-consideration at anything other than a critical moment in time, as a UART that finds itself relying on firepower to sustain mission success is likely already compromised to a degree sufficient to abort its mission. This is not to downplay the importance of any of these factors in any given UAR; rather, they are just as important here as in any other mission, but such a list of considerations do not yield a theory that is concurrently parsimonious and satisfying.

Graphically, the hypothesis could be portrayed as such:

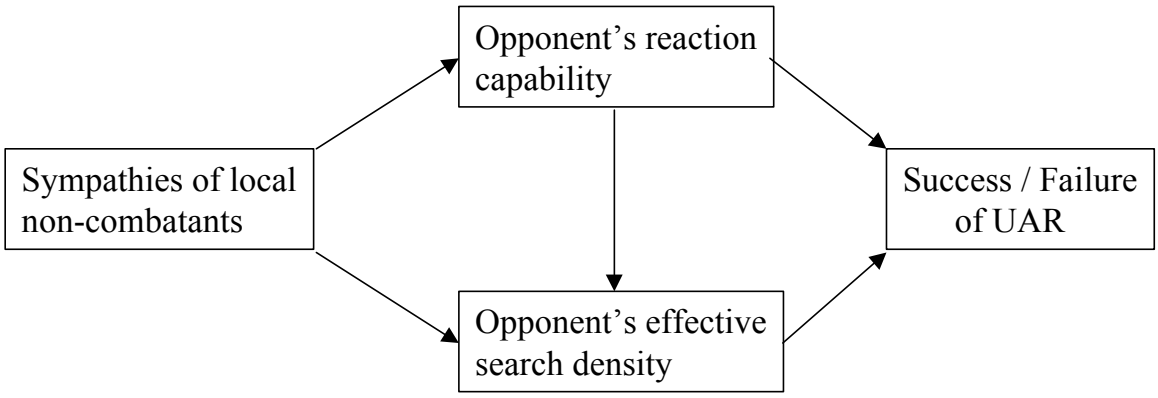

Figure 4. Hypothesis Graphic.

Each of the three independent variables must be considered as a range of possibilities from wholly negative to wholly positive (from the UART point of view), with a breakpoint of sufficiency for any given variable lying somewhere in that range. For instance, sufficient friendly sympathy from the locals may, by providing early warning to the UART, degrade or negate an opponent's reaction capability. Should such an occurrence sufficiently degrade this reaction capability to the point where the UART is able to avoid contact with the opponent indefinitely, then success is highly likely. Likewise, deception and misinformation on the part of the locals may point the opponent's search forces in the wrong direction, thereby decreasing his effective search density and increasing the chances of UAR success. Conversely, however, local hostility towards the UART may increase either the opponent's reaction capability or effective search density, as the indigenous population brings the presence of the UART to the attention of the opponent and/or points the search forces in a more accurate direction.

Obviously, reaction capability influences the opponent's effective search capability, due to the fact that if the opponent cannot react to a reported sighting of either an IP or the UART before the recovery has been made or before the UART has moved on, then the effective search capability becomes zero as the opponent squanders his forces in a 'dry hole.' In that same vein of thought, an opponent's reaction capability may become so overwhelming as to render null and void the variable of effective search density. An example of such a scenario would be if the opponent, through his own means or through the local population, has collected sufficient accurate intelligence to mount a

pinpoint attack on the UART. In this case, there would be no real search, and thus no need to consider an effective search density.

Finally, the presence of a local attitude that may be described as absent or neutral, as rare as such an occurrence may be given the lack of truly unpopulated regions of the world, would leave us with an even simpler theory consisting only of the two independent variables relating to the opponent characteristics.

IV. CASE STUDY: OSS IN THE CBI THEATER

A. HISTORICAL SUMMARY

1. Background

In July 1942, a recently formed OSS unit deployed to India. This unit, formally designated Task Force 5405-A (Moon, 1991, p. 59), but more popularly known as Detachment 101 (DET 101), was commanded by Major Carl Eifler. Detachment 101 was tasked, in general, to conduct guerrilla operations behind Japanese lines. After being refused entrance to the Philippines by General MacArthur, OSS reached an accord with General Stilwell and received permission to operate in Burma. Once they established their headquarters at Nazira in eastern India (Moon, p. 68), DET 101 set about familiarizing themselves with the enemy, as well as with the local people, history, and geography. As recorded by Tom Moon, one of the members of DET 101,

> The people within those jungles were an unknown factor. Only one thing was known – the enemy lay behind that foliage, a clever and experienced jungle fighting [sic] enemy – the Japanese 18th Division with its main base at Myitkyina. Fifteen thousand seasoned troops, commanded by General Tanaka, were waiting. (Moon, p. 65)

Regarding the terrain and people, Moon noted that

> Because the terrain encompassed rugged mountains and heavy jungles, the British [during the pre-war colonial era] had to be satisfied with small outposts. The general geographical area of the Kachins is that area north of the town of Myitkyina, east of the Chin Hills and west of the China border. There are other tracts and area where the Kachins do dominate. The term 'Kachin' denotes not only the tribe known as Chingpaw but other allied tribes such as Maru, Lashi, Atsi, and Kanung. The language was simple. As used locally and idiomatically, it made the Chingpaw a dinstinct individualist. Life in the hills made the native resourceful and very independent, as he had to constantly outwit nature and his enemies. (p. 110)

These ethnic divides within Burma would play a critical role during later operations, when it became obvious to DET 101 that, while they could rely upon the various Kachin tribes to support the fight against the Japanese in the northern highlands, the Shans and Burmese of the lowlands were much more likely to collaborate with the Japanese and to actively compromise DET 101 operations.

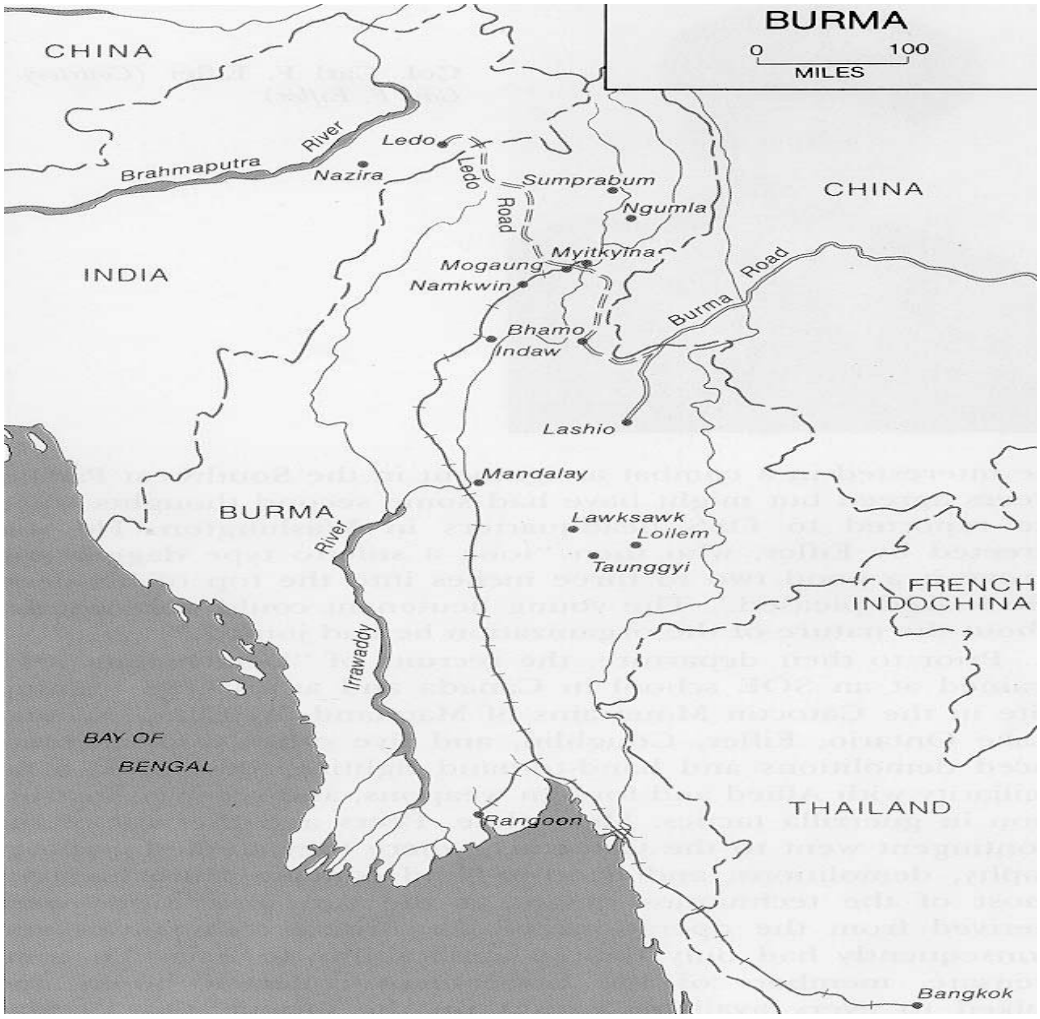

Figure 5. Map of Burma (From Hogan, 1992).

As noted earlier, DET 101's primary mission was to conduct guerrilla warfare, with the goal of harassing the Japanese rear area and disrupting logistics, thereby forcing the enemy to commit valuable combat troops to security roles. To that end, they recruited local agents, trained them in tactics, communications, and demolitions, and sent them into Northern Burma in small teams to establish operating bases. However, even before events in the CBI Theater made UAR a priority mission for DET 101, Eifler had identified personnel recovery as a task to include in their training. According to primary sources, DET 101 identified the need to include training related to aircrew rescue even before launching their first mission:

> The instruction at Camp B lasted for two weeks…our course of training involved skills such as would be useful for our future – [including] searches for downed air crews [sic]… (Peers and Brelis, p. 30)

While Americans, British, or Anglo-Indians usually led these teams, they almost always formed alliances with existing Kachin resistance forces or recruited local Kachins to form companies and even battalions. British intelligence analysts had earlier noted that

> There was an undercurrent of strain and resentment in Burma against the Japanese; to our plans this gave the beginning hope for success. British intelligence verified that a little flame of resistance flickered among the hill tribes. (Peers and Brelis, p. 57)

This advantageous relationship was a feature of one of the very first OSS missions into Burma. The KNOTHEAD mission in northwest Burma was tasked to attack critical bridges and outposts. Shortly after their insertion,

> as the KNOTHEAD group moved through the outer Kachin villages, they heard of a Kachin leader by the name of Zing Htung Naw. This man had refused to have anything to do with the Japanese and had retreated into some of the most remote mountains just out of their reach. Those who followed him helped him with his sporadic raids against the Japanese…The joining of the two [KNOTHEAD and Naw] made KNOTHEAD into even a more formidable force…The narrow trails were becoming busy arteries as the jubilant natives saw a chance to strike back against the hated Japanese. (Moon, p. 118)

This pattern of deliberately seeking local alliances became part of the modus operandi for DET 101 missions, and was to play a critical role in ensuring the survivability of individual teams as they attempted, according to a unit citation issued in the name of the President of the United States, and signed by Chief of Staff Dwight D. Eisenhower, "to clear the enemy from an area of 10,000 square miles" (Moon, p. 324).

2. DET 101 and UAR

DET 101's first recorded instance of UAR-like activity involved, ironically, not the return of a friendly IP, but of a captured Japanese pilot. The Allies had, for some time, been unable to locate a Japanese airfield in Burma. This airfield regularly launched fighters that inflicted severe losses on American cargo planes delivering supplies to China. When a Japanese Zero crashed in the Burmese highlands, the pilot approached

several Kachin tribesmen and directed them to guide him to the nearest Japanese garrison. Unfortunately for the pilot, these particular Kachins were already in the employ of DET 101. They turned him over to Lieutenant Quinn, commander of Team PAT. As described by Moon,

> A Japanese pilot had been captured…he was taken to PAT's headquarters…the first problem was how to get him out. It would have to be by air. The nearest camp with a possible airstrip was KNOTHEAD, nearly one hundred miles away. (Moon, p. 134-135)

After several Kachins marched the captive to KNOTHEAD, Eifler himself piloted a light aircraft from Nazira to KNOTHEAD's location inside Burma, brought the captive onboard after drugging him, and made the return trip to friendly territory. The pilot revealed the location of the hidden airfield, which was destroyed by Allied bombers.

DET 101 became heavily and directly involved in UAR as part of a gentlemen's agreement with General Alexander, commander of the Air Transport Command. Alexander's planes were responsible for flying the 'Hump,' the flight route over the Himalayas to China, to deliver supplies to the forces of Chang Kai-Shek. Several factors made flying the Hump a hazardous endeavor. The C-46s being used were fresh off the assembly lines and had not even been flight-tested; the harsh weather over the Himalayas forced down many planes; and the Japanese regularly interdicted the supply operations with their fighters based in Myitkyina (Ch. 5, p. 101). As a result, Air Transport Command was suffering intolerable losses. Simultaneously, DET 101 was having trouble securing sufficient air support to insert and re-supply its teams in Burma. A brief summary of the agreement between Alexander and Eifler follows:

> Frustrated in his attempts to infiltrate his agents by foot, Eifler negotiated a deal with Brig. Gen. Edward H. Alexander, the chief of Air Transport Command. The general's planes were suffering heavily from Japanese fighters in their attempts to fly supplies over northern Burma and the Himalayas to China. Those crews that survived crashes in the primitive mountains of northern Burma faced little chance of survival in a region full of tigers, snakes, and Japanese. In a conference with the general, Eifler pointed out that if Detachment 101 personnel could reach the region and contact the friendly Kachin inhabitants, they could organize them into a network to help the airmen escape back to friendly lines. Alexander responded with enthusiasm, offering to provide plans and parachutes to the detachment immediately. (Ch. 5, SPECOPS, pp. 103-104)

An actual transcript of this agreement, as recorded by one of the officers serving in DET 101 under Eifler, indicates the degree to which Alexander desperately wanted some opportunity, however slim, to recover his lost pilots and aircrew:

> Air Transport Command surely would give us planes if we would make an effort to bring back their men! At Air Transport Command Headquarters we sought an interview with General Alexander. When we talked about the lost crews, his voice became bitter:
> 'I'd give anything,' he said, 'to guarantee my people that they had a chance.'
> 'That's why we are here.'
> 'But what can you do?'
> 'We can promise that if your crews crash in North Burma, we will go in and lead them out.'
> 'That's the sort of thing they show in movies.'
> 'No, sir. Those hills, those mountains are Kachin country. They are on our side and if we could get in and show them that we mean to stay, we should be able to get your men out.'
> 'It would help a great deal,' the General said, 'just to say to my flight crews, 'Look here, men, don't expect a miracle, but there are guerrillas down there in the mountains. They are on our side. We can contact them by radio and if you are shot down, or you crash, why there's a good chance they will come in and help you get back here.' (Peers and Brelis, p. 70)

Following this accord between DET 101 and Air Transport Command, recovering pilots and other IP became a regular feature of DET 101 operations, albeit usually of secondary importance to offensive guerrilla actions. Most of the DET 101 teams that are recorded as having contributed to UAR activity, such as PAT, KNOTHEAD, and FORWARD (Hogan, p. 108), were more principally concerned with clearing the Japanese out of the highlands and opening the route to Myitkyina. However, at least one team was deployed solely for providing the aid promised to General Alexander:

> It [CPT Wilkinson's team] moved into its pre-established position with its two radios. They were in a direct line for the U.S. planes flying the Hump with precious cargo for Stilwell and Chennault. They were intended to render aid and rescue the crews of planes that crashed, whether shot down by enemy fighters or as a result of mechanical problems. (Moon, p. 114)

The UAR activity of DET 101 was characterized by the fact that it was usually locals, whether sympathetic civilians or DET 101 Kachin recruits, and not Allied service members, who were the first to locate most of the recovered IP. Regardless, the UAR

activity of DET 101 became the single-most effective means of recovery for IP in Northern Burma. In addition to recovering downed pilots and aircrew, several of the DET 101 bases, most notably FORWARD, served as collection points for the wounded and lost members of the Chindits, who conducted long-range penetrations towards Myitkyina under General Wingate (Peers and Brelis, p. 13). In the weeks immediately following their arrangement with Alexander, DET 101 rescued over 125 crewmembers, or almost thirty-five percent of those who bailed out while flying the Hump (Peers and Brelis, pp. 121-122). During certain periods in 1943, DET 101 was recovering an average of almost one IP per day (Moon, p. 293). Whatever the increase in the odds of recovery for any given IP, the effect upon the morale of the allied airmen was significant:

> …the morale of Allied airmen flying over the northern Burmese mountains to China improved markedly as OSS teams and agents rescued downed crews and brought them back to friendly lines. In all, Detachment 101 rescued about 400 Allied flyers. (Hogan, p. 110, as cited in Roosevelt, War Report of the OSS, 2: 371, 381, 387)

> …from the viewpoint of the individual crewman, 101's widespread activities behind Japanese lines provided him a hope of coming out alive in the event he was shot or forced down behind the lines…after the first few groups were rescued from behind the lines, there was a noticeable improvement in the morale of the Air Corps. It continued to improve with additional rescues until, finally, the crewmen took it almost as a matter of course that they would be brought out safely. (Peers and Brelis, p. 221)

According to another source, by the war's end DET 101 had rescued 232 U.S. Air Force personnel, in addition to recovering 342 other allied service members (Peers and Brelis, p. 217). DET 101's UAR activities clearly supported the overall war effort, in and beyond Burma, by returning critical pilots, aircrew, and isolated ground troops to the fight.

3. DET 101 and Civilian Sympathies

DET 101's operations, to include those that involved UAR, were vitally dependent upon the goodwill of the locals. Most of their early missions, conducted before DET 101 had established secure areas throughout northern Burma, eventually deteriorated into running firefights with the Japanese. Invariably, first-hand accounts include some mention of Kachins stepping forward to contact the team and provide unasked-for assistance in evading the pursuing Japanese patrols. One early mission, led

by Captain Jack Barnard, received such assistance on several critical occasions. After being tracked by the Japanese for ten days, and finally finding themselves surrounded near the village of Nmai Hka, Barnard's team was assisted when…

> …Out of nowhere there appeared an old Kachin headman who was a close relative of one of the Kachins in his [Barnard's] group. He knew every inch of the ground and that night led Jack and his party through the Japanese encirclement so that by dawn they were twenty miles away. (Peers and Brelis, p. 94)

Later during the same mission, and while attempting to find a way to cross the Irrawaddy River, Barnard was again assisted by

> some of the nearby Kachins… they [Barnard and his team] learned of a spot on the river where the local Shan fishermen tied up their boats. (Peers and Brelis, p. 91)

Barnard came to rely upon the Kachins, even on this first mission, to the point that he entrusted them with his team's local security while they rested:

> They [Barnard and his team] were in the village of friendly Kachins whom they knew they could depend upon for protection while they caught a few hours' sleep. (Peers and Brelis, p. 87)

Such repeated acts of assistance eventually led to a solid alliance between DET 101 and the Kachins. As time went on, individual Kachins, independent of DET 101 personnel, began assisting any allied IP they happened to locate. When flight #634, a C-46 flying the Hump from Kunming to Chabua, went down due to mechanical reasons, the two survivors, LT Starling and CPL Wyatt, were protected and assisted by Kachins who eventually returned the Americans to DET 101:

> Though both men encountered different natives, in each case the natives were very friendly…the enemy was in the immediate vicinity. At one time Corporal Wyatt looked out of the cave and watched a party of five Japanese soldiers search the home of his benefactor, which was located barely fifty feet away." (Peers and Brelis, p. 122)

In a similar incident…

> …an American cargo plane crashed while trying to fly the Hump to China. The natives found two men dead but the captain and two enlisted men alive. They could not walk. The Japanese immediately appeared, but the natives hid the men in a cave. Unable to get any information, the Japanese left. The men were then taken into FORWARD [DET 101 field base

> behind Japanese lines] where Luce treated them, and eventually they were able to return to their own unit. (Moon, p. 157)

Civilian sympathies, especially in central or southern Burma, just as often had a detrimental effect upon DET 101 operations. Japanese intelligence officers were able to track the movements of DET 101 by employing a spy network encompassing Shan, Burmese, and a few Kachin villages (Peers and Brelis, p. 93). During one of DET 101's first attempts to infiltrate Burma via airborne insertion, the team in question jumped into an area of undetermined sympathies. The results were tragic and rapid:

> As we made our last pass, we could see a discomforting sight: villagers streaming out from every direction, heading toward the drop zone. (Peers and Brelis, p. 102)

> While flying over the drop zone, Peers felt misgivings about the proximity of a village of unknown loyalty but went ahead with the jump…the six Anglo-Burmese agents were attacked almost at once by Burmese natives, who killed three and turned the others over to the Japanese for execution. (Hogan, p. 105)

Further into southern Burma, much less operational signature was required to invoke the consequences of the locals' sympathies for the Japanese. Eifler had been struggling for months to insert an operational team into the south. After numerous delays and setbacks, he finally succeeded in infiltrating a team by boat, despite terrible surf conditions. Unfortunately,

> On the beach, a wave washed in and deposited a lone hand battery cell. It lay there glistening, as it was found by a fisherman walking the beach early the following morning. Inevitably, he was suspicious and turned it over to the Japanese…[the patrol in question] never came on the air. (Peers and Brelis, p. 116)

Before long, a pattern became evident to the DET 101 planners. After overcoming initial failures, their operations into northern, Kachin-dominated Burma met with continuing success. As long as DET 101 had established friendly relations with the locals, usually via an exploratory 'pilot' team, or as long as they inserted into a friendly safe haven and then proceeded by foot into their operational area, they rarely lost teams or agents. By contrast, in Shan-dominated southern Burma, mission after mission met with failure.

> In Northern Burma nearly every operation was successful and was developing according to plan…however, the situation in Central and Southern Burma was not so bright. We had tried four group operations and had failed in all four. (Peers and Brelis, p. 121)

By the war's end, DET 101 had only a single, deep-cover agent who had managed to infiltrate and operate successfully in southern Burma. This pattern of ethnically based civilian sympathy upon mission success led to a standard operating procedure for DET 101, whereby…

> …Before the detachment could organize guerrillas in a given area intelligence and prior contacts were essential. From forward bases near the combat zone the unit infiltrated, by air or foot, small teams of advance agents behind Japanese lines to reconnoiter and locate friendly natives. For the most part, the detachment arranged reception committees for the agents; only rarely did they enter an area blind. (Hogan, p. 106)

4. DET 101 and Japanese Reaction Capability/Effective Search Density

The exact disposition of the Japanese 18th Division throughout Burma is not recorded in detail in any of the documents that I was able to obtain. However, all of the primary sources written by members of DET 101 clearly indicate that General Tanaka deployed the bulk of his combat troops between Myitkyina, Mandalay, and Rangoon in southern Burma in order to maintain control of the airfields, ports, and navigable rivers. Most indications of Japanese combat units in northern Burma seem to refer to outposts of, at most, battalion strength. Interestingly, it was what was not mentioned in any of the DET 101 documents that gives insight as to the reaction capability and effective search density of the Japanese in northern Burma. Nowhere in any of my sources did DET 101 personnel ever mention ambushing, capturing, or destroying any form of motorized transport. Indeed, there was no mention of the use of motorized transport by anyone, whether Allied, Kachin, or Japanese, in northern Burma. Thus, we can safely assume that the Japanese reaction capability was not increased due to the use of motorized search forces. Additionally, many of the DET 101 sources reflect patrols coming into contact and being pursued by Japanese forces. However, most of these accounts end with the DET 101 team utilizing the rugged terrain and dense foliage of northern Burma to slip away unharmed. In fact, nowhere in any of the primary sources was there any indication that Japanese pursuit forces in northern Burma annihilated a DET 101 patrol. In fact,

several of the DET 101 teams were noted for having maintained ongoing operations in close proximity to Japanese forces throughout the conflict. One such example was PAT, who conducted UAR and offensive operations just north of Myitkyina:

> In this location he was surrounded by Japanese bases. It was about thirty miles from Myitkyina and Mogaung, which had relatively large Japanese garrisons, about twenty miles west of Nsopsup, a large supply base and hospital area, and about twenty miles south of Ritpong, where the Japs had an outpost of 300 to 500 men. (Peers and Brelis, p. 128)

One of the best indicators, from a historical perspective, of the Japanese reaction capability and effective search density when attempting to counter DET 101 operations is that, of the 187 Americans operating behind Japanese lines in Burma, only 22, or less than twelve percent, were killed by the Japanese (Peers and Brelis, p. 220). All of these Americans operated in northern Burma; the missions into south Burma consisted entirely of either Anglo-Burmese teams or Burmese agents.

By contrast, in southern Burma, the terrain was less formidable, the land was more open as a result of intensive agriculture, and, as already noted, more Japanese combat units were present. While all of the anecdotal evidence indicates that it was Shan civilians that repeatedly compromised DET 101 operations in the south, as opposed to initial detection by the Japanese themselves, it goes without saying that without sufficient reaction capability and truly effective search density, the best local intelligence possible would not have resulted in the historical 100% failure rate experienced there by DET 101 (Peers and Brelis, p. 121).

B. ANALYSIS AND CONCLUSIONS

DET 101 clearly performed UAR in the CBI Theater. They succeeded in returning between 400 and 600 IP to friendly control, at the cost of deploying 187 Americans behind enemy lines and sustaining 22 casualties. However, the overwhelming majority of the UAR incidents appear to have involved initial IP contact with the local Kachins rather than with the Americans or British of DET 101. This fact reinforces the apparent criticality of having some sufficient level of local sympathy when conducting UAR, especially in an area such as northern Burma, where terrain precluded rapid movement by the DET 101 members. The criticality of this local sympathy is further reinforced in the DET 101 case study when one compares operations in northern versus

southern Burma, and the related levels of success experienced by DET 101 in each of these regions. Moon, Peers, and others indicate that while civilian support in northern Burma was not universal, it was reliably sufficient that DET 101 teams did not fear being compromised without warning. Their overwhelming success in northern Burma, not only in avoiding the destruction of any given team, but also in operating for extended periods of time in close proximity to Japanese outposts, stands in stark contrast to the predictable frequency with which their patrols were compromised by locals in southern Burma. While UAR was more of a feature of operations in the north, given the required flight routes and frequency of cargo traffic over the Hump, allied air operations occurred throughout Burma. None of the primary sources indicate a single incident of local civilians aiding a downed flier in the south, and none mention a single incident of successful UAR in that region.

As noted earlier, it would seem that none of the forces operating in northern Burma were able to make use of motorized ground transport. Thus, Japanese forces searching for DET 101 teams could move, roughly, at only the same foot speed as the DET 101 teams themselves. Given the tendency of the Kachins to favor, assist, and warn the Allies, the Japanese lacked sufficient mobility to destroy even a single DET 101 team in areas where the locals favored the Allies.

The Burmese area of operations encompassed approximately 10,000 square miles. The 18th Division, with its headquarters at Myitkyina, comprised about 15,000 Japanese soldiers. Thus, theater-wide, the Japanese maintained a presence of only 1.5 soldiers per square mile. Taking into account the fact that not all of these 15,000 were infantry, this average surely drops below 1 soldier per square mile throughout Burma. Factoring in the preference of General Tanaka to maintain most of his combat strength in the south, we can safely assume that the presence of Japanese troops in northern Burma was even less than the theater-wide average. Finally, when considering the impact of the rugged, dense terrain in the north, it becomes obvious that the Japanese found it virtually impossible to achieve effective presence continuously throughout northern Burma. Thus, to achieve effective presence at any one point in time, within a limited geographic region, would require significant changes to the local status quo of Japanese forces that could not pass unobserved by the Kachins. The obvious interpretation of the Japanese inability to track

down, corner, and overwhelm even a single DET 101 team in northern Burma is that, given the nature of the geography in this region and its impact on Japanese reaction time, it was impossible to achieve effective search density without also having sufficient intelligence and/or civilian sympathy.

In summary, graphic showing the controlled comparison of variables between northern and southern Burma reveals the criticality of civilian sympathy, and its attendant effects upon enemy reaction capability and effective search density:

	Civilian Sympathy	Reaction Capability	Effective Search Den.	UAR Success
North Burma	Yes	Extremely Limited	Limited	High
South Burma	No	Extremely Effective	Extremely Effective	None

Figure 6. Controlled Comparison of Variables, North and South Burma.

V. CASE STUDY: UNPIK IN NORTH KOREA

A. HISTORICAL SUMMARY

1. Background

At the close of World War II, Japanese occupation forces left Korea. Korea, as a whole, subsequently became a trustee of the United Nations, with the Soviet Union managing the northern half of the country and the United States administering the southern half. Over the course of the next few years, Communist advisers from around the world trained and supplied the ever-increasing armed forces of North Korea, while in the south the United States largely ignored the capabilities of the ROK armed forces. Simultaneously, US presence was continually reduced in the country. On 12 January 1950, Secretary of State Acheson failed to include any mention of South Korea in a speech outlining US defensive commitments in Asia. Emboldened by this apparent lack of US support for South Korea, North Korean forces swarmed southward across the 38th parallel on 25 June 1950. By September of the same year, US forces conducted the Inchon landings and broke out of the Pusan perimeter. Unknown to General MacArthur as he fought his way north, anti-Communist insurgents had been active in North Korea, possibly as early as 1946:

> It is clear that by then [the implementation of the North Korean Draft Act of 1947] an anti-Communist underground existed. It probably now [after the passage of the Draft Act] gained new recruits. It may have had connections with North Korean groups south of the 38th parallel. It is said that this underground made, smuggled, or stole arms with which its members ambushed Communists and their police. They scattered propaganda and tried to enlist sympathizers, especially among the young people. Many of the underground men hid out in the hills, soliciting food from the country people. (UN Partisan Forces in the Korean Conflict, p. 3)

As the UN forces attacked up the peninsula, they were shocked to encounter numerous villages and districts that had already been liberated by these anti-Communist partisans. This was particularly true in the province of Hwanghae, on the west coast:

> The present North Korean partisan forces, fighting with the United Nations against a common enemy, had their origins for the most part among the populace of the Hwanghae province…The area of Hwanghae Province is 6,463 square miles. The Japanese estimated its population, as of 1941, at 1,812,208, excluding Japanese and other foreign nationals.

> The terrain is hilly and even mountainous; the average elevation is probably 1,500 feet. Between the hill masses lie flat valleys, 200 to 1,500 yards wide…(UN Partisan Forces in the Korean Conflict, p. 1)

As the UN forces continued their advance towards the Yalu River, these partisan forces acted as police and rear area security forces in their native districts. By November 1950, however, UN forces were in full retreat as the Chinese entered the war and drove MacArthur's army south of Seoul once again. This created a hazardous situation for the anti-Communist North Korean partisans, as they had exposed themselves to identification and targeting by the Communist security forces that once again took control of their villages. Thousands of these anti-Communists fled south, but some were determined to remain behind and resist. Those who stayed behind were hounded mercilessly, with no support forthcoming from the UN. Partisans who survived the initial series of arrests and executions attempted, for a few weeks, to conduct guerrilla warfare on the mainland, but eventually found themselves driven to the western coast, where they fled to the numerous islands in the Yellow Sea. However,

> Many men who fully shared their [the partisans on the western islands] sentiments still remained behind the new hostile [sic] and guarded shores of Hwanghae-do province. (UN Partisan Forces in the Korean Conflict, p. 10)

It was this combination of active partisan groups on the western islands, and sympathizers on the mainland, that came to the attention of the UN early in January 1951, by way of reports from the South Korean navy (Malcom, personal communications, 8 NOV 01). As a result, MacArthur was persuaded to create a military organization responsible for contacting, supporting, training, and coordinating partisan activities in North Korea in anticipation of the support they could provide for the expected UN counter-attack into North Korea.

> [MacArthur's] staff first created within its own Intelligence Directorate (FEC-G2) the deceptively named Liaison Group (LG). Hastily thrown together and continually evolving throughout the war in a bewildering series of organizational changes, the Liaison Group was in fact the genesis from which sprang all of the command's subsequent unconventional warfare organizations…(Haas, pp. 13-14)

The command and control structure, and the resulting unit acronyms, for this partisan support effort were, if nothing else, convoluted and confusing. The LG, named above, became the Far East Command/Liaison Detachment (Korea) (FEC/LD (K)), which managed the Eight United States Army in Korea, Miscellaneous (EUSAK Miscellaneous) (Breuer, p. 159). The actual unit performing the role of EUSAK was designated as the 8086th Army Unit, and it directed the efforts of three distinct operations: William Able Base, later renamed Leopard Base and manned by the 8240th Army Unit, conducted partisan warfare from the islands off of Hwanghae province; Baker Section, which was responsible for agent line-crossing intelligence operations (TLO) and airborne operations into the North Korean mainland (Aviary); and Task Force Kirkland, which conducted raid operations on the east coast of North Korea (Hass, p. 35-36). This case study will focus on the activities of Leopard Base, whose 'Donkey' units, comprised of and led by North Korean partisan refugees from Hwanghae, eventually came to be known as United Nations Partisan Infantry, Korea (UNPIK).

Colonel McGee, a veteran of guerrilla operations in the Philippines during World War II, was named as the commander of Leopard Base operations. In analyzing the situation off the west coast,

> His [COL McGee's] primary assumptions were first that the NKPA "is incapable of securing completely its rear area to include the coastline," and second that "pockets of friendly forces capable of organization into intelligence and guerrilla operations exist behind enemy lines." (UN Partisan Forces in the Korean Conflict, 1951-52, as cited in Malcom, p. 18)

After recruiting a suitable number of OSS veterans and junior officers with experience in basic training assignments, McGee set about organizing, supplying, and training the partisans on the various islands. In an assessment by one of those junior officers,

> In January 1951 there were pockets of partisans operating in North Korea (200 to 300) These partisans had a lot of success initially against a NKPA [North Korean People's Army] force that was too small to cover the west coast. The partisan threat was recognized by NKPA in 195l and 1952, but the primary NKPA troop strength went to the front line. In fall of 1952 as peace talks looked promising, the NKPA shifted major units from the front lines to defend the west coast against the partisans. (Malcom, personal communications, 31 AUG 01)

By January 1952, the 8240th Army Unit at Leopard Base was effectively operational at its base on the island of Paengnyong-do, with secondary bases on Wollae-do, Cho-do, and Sok-to (Malcom, personal communications, 8 NOV 01). UNPIK operated from these islands and conducted guerrilla warfare on the mainland. Their activities included raids, ambushes, prisoner snatches, target marking for air strikes, bomb damage assessment, intelligence gathering, and aircrew recovery. A typical operation for UNPIK involved launching from the islands by sail junks, tugs, or, later, military landing craft to conduct missions ranging in time from a single day to a few weeks. While UNPIK enjoyed widespread civilian support on the mainland, it was not sufficient to ensure reliable safe areas there. Accordingly, their area of operations did not routinely extend more than a few dozen miles inland, and centered mostly on the coastal regions of North Korea from the Hwanghae province north to the Yalu River. In fact, from May to November 1951, over 50% of UNPIK activity occurred solely in Hwanghae province, a pattern that endured for the duration of the conflict (Cleaver, p. 47).

2. UNPIK and UAR

Soon after UNPIK become operational in early 1951, efforts began to organize aircrew recovery operations and evasion networks. One of the specific missions assigned to UNPIK was to assist both downed airmen and escaped POWs (UN Partisan Forces in the Korean Conflict, 1951-52, as cited in Malcom, p. 55). Only a few months after UNPIK began operating, Captain Robert Channon, of the U.S. Army Rangers, was directed by Colonel McGee in May 1951 to travel to the island of Hacwira, sixty miles north of Paengnyong.

> At a fishing village there, [Channon] recruited ten civilians into the pilot escape-and-evasion network that was being established in North Korea and on the offshore islands along the west coast. The native recruits were taught how to give signals to a downed UN pilot to indicate they were friendly; how to get word to UN lines that they had a pilot in their care; and how to conceal him until an evacuation team arrived by sea or by air. (Breuer, p. 164)

These UNPIK partisans, according to Malcom, had the communications gear necessary to independently and directly contact U.S. units with recovery platforms

(Malcom, personal communications, 8 NOV 01). The joint effort of partisans and U.S. aircraft often resulted in a speedy recovery:

> If the pilot could reach the coast before bailing out…partisans based on the off-shore islands provided assistance while guiding in elements of the FEAF [Far East Air Force] Air-Sea Rescue Service by radio to make the pick up. The usual FEAF package consisted of 2 to 4 fighter aircraft to engage enemy ground elements, and a helicopter or seaplane to actually rescue the pilot. They usually completed the rescue in a couple of hours. (Fondacaro, pp. 91-92)

The northernmost operations of UNPIK, which operated partially from islands, but mostly from a roving flotilla of junks, were uniquely situated near the edge of MIG alley. MIG alley was the scene of a large number of the dogfights involving Communist and UN aircraft, and thus was the sight a disproportionate number of downed pilots. Lieutenant Jim Mapp, the American advisor to the Donkey unit in this area, was tasked with the recovery of downed fliers as his primary responsibility (Malcom, p. 164 and personal communications, 8 NOV 01). With most of the offshore islands held by the partisans, and with a sizeable sympathetic population on the mainland, personnel recovery by UNPIK had two distinct facets: pilots who could successfully ditch over the Yellow Sea were recovered in the water or on the islands by the partisans, and those who went down over the mainland were assisted by the friends and relatives of the partisans. The Fifth Air Force, obviously preferring the first alternative, briefed its pilots on the presence of the partisans on these islands, which, in a sense, constituted individual DARs:

> Partisan havens afforded excellent bailout points for UN airmen forced to abandon their aircraft over enemy territory. Headquarters Fifth Air Force compiled a list of 'safe islands' north of the MLR [Main Line of Resistance, or the FEBA] for the use of its pilots and crewmen…Most of the islands were occupied by North Korean partisans, and most were on the west coast off the shores of Hwanghae Province which placed them off the western end of MIG alley. (Schuetta, pp. 150-151)

> United Nations pilots flying over North Korea knew that a bailout from their crippled aircraft over the peninsula's rugged interior meant almost certain capture and torture. To stand any chance of rescue their best if not only hope was to get at least as far as the offshore islands, where partisan forces…operated. The air force designated these islands as 'safe havens,' a place for the pilots to head if bailing out over enemy territory appeared unavoidable. (Haas, pp. 88-89)

The Americans of the 8240th Army Unit recognized that not all pilots would be so fortunate as to make it to the coastline before being forced down. To that end, they worked through the Donkey units and their mainland contacts to provide some chance of recovery inside North Korea:

> The recovery of pilots was a joint effort by all parties at Leopard base. We briefed the partisan leaders on the importance of rescuing the pilots. The partisan leaders informed their fighters and their families living in North Korea to watch the skies for pilots that were parachuting from damaged planes. The AF informed their pilots to look for friendly North Korean civilians or partisans if they were shot down. The 11 partisan leaders met with the Commander of Leopard base at least once per month to get their supplies and to receive special instructions from FEC/LD (K). On 11 April 1952, LTC Vanderpool published a 24-paragraph letter to Leopard, Wolf Pack, Kirkland and Baker on guerrilla operations. Para #15 covered additional instructions on training partisans for E&E operations and added a $50.00 bonus of trade goods for the evacuation of any U.S. members of the armed forces from behind enemy lines. Para 16 covered the establishment and the use of safe houses for couriers and evacuation of E&E personnel. These houses were pre-positioned for the best use of E&E and couriers. However, agents had to set up safe houses in the areas where they had friends and relatives that would shelter and feed them. (Malcom, personal communications, 31 AUG 01)

Despite their best attempts to establish a reliable recovery network on the mainland, it was soon recognized that it remained the best option for a pilot to ditch in the ocean. Malcom estimates that "about 75% of the rescued pilots were recovered from the water or from small offshore islands" (Malcom, personal communications, 31 AUG 01). Efforts to enable the recovery of IP on the mainland extended beyond Hwanghae province, largely due to the efforts of the Central Intelligence Agency (CIA). The CIA, in an attempt to establish an escape and evasion network throughout North Korea, recruited and trained…

> …indigenous Korean agents seeded throughout the North to establish safehouses. Fliers bailing out inland, and successfully avoiding capture, made contact with local agents. The downed pilots were guided through a series of these safehouses, handed off from agent to agent, and eventually reached an offshore island, where one of the tow indigenous, CIA-hired fishing fleets made the pick up. (Fondacaro, p. 91)

More so than any of the DET 101 recovery operations in Burma, some of the UNPIK operations closely resembled the current concept of UAR, in that the recovery

forces were appropriately pre-positioned behind enemy lines to directly observe and/or directly respond to specific IP incidents. One such incident, reflecting the wisdom of having recovery forces in place in MIG alley, occurred in 1952:

> As part of their spotting function for the UN air forces, the guerrillas frequently witnessed crashes and emergency landings of both UN and enemy aircraft. On July 27, 1952, aircraft from HMS Ocean had two engagements with the enemy which was of interest to Fifth Air Force Headquarters. At 1125 hours a flight of four Fireflies from the carrier were attacked by two MIG's nearKyomipo. One Firefly was badly damaged and made a forced landing on Paengnyong-do, near the Leopard Base. At 1415 hours, a flight of four Seafuries from the same carrier were attacked by four MIG's just southwest of Pyongyang. One of the Seafuries diteched near Cho-do, and the crew was immediately picked up by partisans based on the island. Of a representative cross-section of 60 partisan guerrilla operational summaries reported by Leopard Base, six of them, or ten percent, centered on aircraft crashes. (Schuetta, pp. 134-135)

In another incident, Air Force Colonel Schinz was shot down while piloting a P-51 Mustang over North Korea. Making it to the coastline, he managed to bail out and swim to a nearby island. Despite displaying the proper recognition signals to passing aircraft, Schinz remained missing in action for weeks before being located by partisans who happened across him while deliberately searching for yet another recently downed pilot. The exact text of an operational summary filed by Jim Mapp on 10 June 1952 follows: "Pilot, friendly, rescued by Himong from Taewha-do. 9 Jun 52. Air Force colonel, 33 years old" (Malcom, p, 165). According to Malcom,

> The rescue of Schinz again demonstrated the value of the partisans. We not only had seaborne units behind the lines searching for downed pilots, we had agents and safe houses on the mainland, and island bases such as Cho-do and Paengnyong-do where pilots could land crippled aircraft. The Fifth Air Force reported that of ninety-three of their pilots shot down between July 1950 and January 1952 who managed to evade capture, twenty-nine of them, or 31 percent, were rescued by partisans. (Malcom, p. 166, and Schuetta, pp. 151-152)

The Korean War witnessed the addition of CSAR by helicopter as a new recovery option. Official records indicate that, in addition to the 31 percent recovered by partisans, 60 percent were recovered by either helicopter or light aircraft. These same records, however, note that these statistics "resulted from considering only the category

of the rescuing agency which made initial contact with the downed airman" (Schuetta, pp. 153). What is not taken into account in these statistics is that:

> Two helicopters were stationed on Paengnyong-do, and one was on Cho-do. These two islands were centers of partisan operations and afforded strategic locations for helicopters to aid in the evasion and escape program of the Fifth Air Force. (Schuetta, pp. 151)

While the statistics are thus technically correct, the partisan contribution to recovery operations was undoubtedly higher than 31 percent, given that the helicopter recoveries in question could not have occurred in that area, behind enemy lines and far from friendly airfields, without the ability to launch from the partisan-held islands. As noted in Chapter One, and as obviously occurred here at Leopard Base, one of the potential benefits of UAR is its ability to extend PR capabilities beyond the flight range of conventional CSAR.

3. UNPIK and Civilian Sympathies

Just as with DET 101 operations in Burma during World War II, partisan activity and the resulting UAR on or near the North Korean mainland could not have occurred without sufficient civilian sympathy for the anti-Communist cause. This was especially true for UNPIK operations in Hwanghae province. As already noted, previous independent insurgent activity in this area had created a region of dedicated resistance to the Communist occupation:

> As the troops advanced, UN forces found, more often than not, towns and villages already under the control of anticommunist North Koreans…This was especially true in Hwanghae-do. Hwanghae-do is North Korea's southwestern province. It is bordered on the north by the Taedong River, on the east by the Yesong River, and on the south and west by the Yellow Sea…When the North Korean Central Committee took individual ownership of farms and businesses away in 1947 and put them under government ownership, the people rebelled. The rebellion was disorganized, and it was quickly suppressed…surviving rebels took to the hills where, over the next two and a half years, they slowly evolved from groups of two or three men into larger, active anticommunist partisan units. [The eventual] UN withdrawal from North Korea meant hard decisions had to be made by the North Koreans who had helped the UN. This was particularly true for the partisans and underground members who had emerged from hiding during the UN advance and been involved in the bloody takeover of towns and villages. (Evanhoe, pp. 31-32, 35)

One excerpt from Haas indicates that it may very well have been that the Communists directly created their own problems regarding civilian loyalty in Hwanghae province. North Korean refugees were fleeing before the Chinese advance in 1950, attempting to make it to South Korea or to the offshore islands, but the Communist forces quickly moved to cut off their escape routes. Consequently, those refugees trapped on the mainland remained, to some degree and in secret, ardent supporters of UNPIK:

> …one postwar study report concluded in a masterpiece of understatement, "During the period 1945 to 1950 there is evidence that the Communists, both native and imported, failed to enlist the sympathies of important segments of the population in the area." Included in these 'important segments' were the thousands who publicly rallied around UN forces surging northward through Hwanghae Province in the fall of 1950. And as noted earlier, it was these same groups that found themselves fighting and fleeing for their lives during the following weeks as the Chinese drove southward through Hwanghae that winter. The refugees' violent exodus to the west coast came to an end in January 1951, as the Communists sealed off the coastal exit routes…the Communists' internal security forces immediately turned inward to eliminate the trapped remnants of the rebellion in Hwanghae. (Haas, p. 44)

While the Communist security forces effectively eliminated the active partisans who failed to evacuate to the islands, they could not hope to identify and eliminate all the civilians who were secretly sympathetic to the partisans. As a result, the situation stabilized with the active partisans out of Communist reach on the islands and the partisans' sympathetic families trapped on the mainland (Haas, p. 44). Malcom estimates that, of those North Korean civilians still living in Hwanghae province after the Chinese and North Korean Communists once again seized the region, about thirty percent actively supported the partisans, with the remaining seventy percent supporting the Communists (Malcom, personal communications, 31 AUG 01). However, he qualifies this level of support for the Communists by noting that those whom he calls 'Communist supporters' had largely been coerced into this ideological position, and that they basically remained passive. Only rarely, he claims, did hostile civilian activity lead to the Communists gaining actionable intelligence (Malcom, personal communications 8 NOV 01). In fact, he notes that it was occasionally the friendly civilians who inadvertently interfered with UNPIK operations by moving into an active battle area and attempting to gain evacuation

to the islands by attaching themselves to an UNPIK unit (Malcom, personal communications 8 NOV 01).

The record indicates that those civilians of Hwanghae province who took an active role in the local conflict were predominantly dedicated to supporting the partisans. However, this level of support did not, by any means, extend very far beyond Hwanghae province, let alone throughout North Korea. As mentioned earlier, UNPIK operational tempo dropped off sharply beyond the boundaries of Hwanghae. All of the other operations under FEC/LD (K) suffered, compared to UNPIK, stunning numbers of casualties and/or significantly less operational success. According to the post-war reports, the TLO line-crossing operations were deemed, at best, as risky propositions for the Korean agents, the TF Kirkland missions were largely ineffectual, and the Aviary missions were judged to be almost inhumane in their determination to drop Korean agents to an almost certain death. Despite the variety of mission profiles, the means of insertion, and the areas of operations for these other FEC/LD (K) operations, the one common factor was that, unlike UNPIK, none of these others had any degree of linkage between the operatives and the civilians in the area of operations. The line-crossers operated in the front-line battle area where, at best, their extent of interaction with civilians was to blend in amongst refugees. Task Force Kirkland utilized forcibly recruited South Koreans who had little desire to conduct dangerous missions behind North Korean lines. Finally, the Aviary missions usually dropped agents into a blind situation, or, unknown to the Aviary planners at the time, to a rendezvous with a previously dropped agent or team that had already been turned by the North Koreans. Malcom estimates that the Leopard Base operations were indeed the most successful compared to the other FEC/LD (K) operations due in large part to the sympathies of the civilians of Hwanghae province (Malcom, personal communications 8 NOV 01).

4. UNPIK and North Korean Reaction Capability/Effective Search Density

The strength and disposition of the NKPA and CCF forces in Hwanghae varied over time in relation to the situation at the FEBA. Coastal and rear area security seemed, logically, to hold less importance than the situation at the front. Once the peace talks commenced and it became relatively obvious to the Communists that the UN was not

likely to attack northward, much more attention could be paid to rear area nuisances such as UNPIK. However, even from the beginning of UNPIK operations…

> …the NKPA security forces were so prevalent throughout the North that the partisans were forced to operate in small teams and could never develop a large safe area. (Malcom, p. 37)

Similar to the situation confronting the Japanese in Northern Burma, the reaction capability of the Communist forces was apparently limited in some degree by a lack of motor transport and by the effects of the terrain. Additionally, as already noted, the Communists could not reliably depend upon the local civilians to alert them to the presence of UNPIK elements. Indeed, the primary sources indicate that most, if not all, of the engagements between Communist forces and UNPIK resulted from UNPIK offensive actions that eventually drew a response from another nearby Communist unit. Even then, the terrain channeled the enemy reaction forces in predictable ways that could be taken advantage of by UNPIK forces:

> NKPA stationed their combat troops in North Korea to meet the perceived threat from FEC. They heavily defended the front lines, the east coast, and the west coast up to the Onglin peninsular (Wolf Pack). The least defended region was in the Leopard base area of operations until the fall of 1952. Response time by the NKPA on the front lines was immediate but by the time you got to Leopard base the average time to bring in overwhelming numbers of NKPA was probably about 2 hours. On the west coast the NKPA had to move on roads and open areas and we could use aircraft and naval gunfire to slow down that response. (Malcom, personal communications, 31 AUG 01)

Malcom later stated that UNPIK offensive activity reliably drew a Communist response, but that such reaction units generally took another from one to two hours to respond to the site of the UNPIK action (Malcom, personal communications, 8 NOV 01).

The Communists' ability to effectively control and sweep the UNPIK area of operations varied over time. As the battle for control over front-line territory continued in the vicinity of Seoul, rear area security apparently remained of secondary importance to the Communists. During the first year of operations, UNPIK carried off numerous successes and, on occasion, ranged inland to considerable distances. As the front stabilized, the situation became more problematic for UNPIK:

> By October 1952 the North Korean IV Corps (43,300 troops) was assigned to the defense of most of the Hwanghae coast. Assuming that the North Korean 9th Brigade, 81st Artillery Unit and the Communist Chinese Forces' 42nd, 63rd, and 64th Armies were also primarily concerned with coastal and/or zonal security, the total enemy defense force in the Hwanghae and adjacent areas was 160,300. (Cleaver, p. 99)

As a rough gauge of the fluctuations in Communist strength over time, Malcom notes that enemy strength in Hwanghae province was at 160,300 in October 1952, 146,300 in March 1953, and 203,900 in June 1953 (Malcom, p. 186). His observations as to the effect of enemy strength upon the ability of UNPIK to operate on the mainland reveal that as the situation along the front line stabilized, the effectiveness of UNPIK declined. An additional constraint, apparently self-inflicted, was the large-scale recruiting of South Koreans into the Donkeys. These personnel, lacking any connections to or familiarity with Hwanghae province, actually detracted from operational ability.

> Several factors affected the operations of partisans in North Korea in l952 and 1953. We were probably at about 50% combat efficiency in Oct 52 against an enemy of 160,300. We dropped to about 40% in March 53 although the enemy strength declined to 146,300. We continued to decline in operational efficiency to about 30% in June 53 against an enemy of 203,900. The impact of the FEC decision in Oct 52 to quadruple the number of partisans from 9,000 to 40,000 was a bad decision. A wholesale recruiting was launched in South Korea to fill these slots. This brought in new men from outside of our geographical area and reduced our fighting power. This also increased the risk of double agents and draft dodgers. The war was coming to a close and the partisans were not pleased with FEC plans for their future. (Malcom, personal communications, 31 AUG 01)

B. ANALYSIS AND CONCLUSIONS

Of all the special operations activities conducted within North Korea, only the Leopard Base operations resulted in continued success. The line-crossing operations of Baker section were extremely risky and usually generated intelligence that was out of date. The Aviary operations, also belonging to Baker section, suffered horrendous losses, and, when the dropped agents were not killed outright, often resulted in agents being played back against their controllers in the south. Finally, Task Force Kirkland never seemed to overcome its problems of low morale and desertion long enough to mount an effective special operations campaign.

It should be noted, though, that even UNPIK was not able to successfully establish a base of operations on the peninsula; they were, however, the only group able to reliably penetrate the mainland, conduct their mission, and return to friendly control. In 1952, 93% of all guerrilla activity occurred as a result of UNPIK action in Hwanghae province; less than 1% occurred due to Task Force Kirkland, and about 5% can be attributed to Baker section. One post-war study, examining partisan operations from August 1950 to June 1951, concluded that, "the rate of returns [the ability to enter and return from the mainland] never dropped below 90 percent" (Hass, p. 30). This reflects a remarkable ability to move into, operate in, and return from enemy-held territory. Comparison with the other groups operating in North Korea points to the criticality of the sympathies of the civilians in Hwanghae province.

While UNPIK gained some operational freedom because of this sympathy, it must be pointed out that their continued existence on the islands had nothing to do with this popular support, but instead must be attributed to the fire support of both naval vessels, particularly the British (Fondacaro, p. 99), and of UN aircraft. Consequently, the impact of civilian sympathy on UAR must be seen as limited to the cases of IP incidents on the mainland. As noted earlier, most of the recoveries of IP occurred off the coastline; therefore, civilian sympathies had less to do with assisting UAR than with enabling offensive UW on the mainland. However, as a result of this ability to securely maintain bases and conduct UAR offshore, Communist reaction capability and effective search density in the DAR approaches zero. All records of attempts by the Communists to attack these partisan-held islands reflect a complete lack of success; in fact, at least one of these islands, Paengnyong-do, is still held by South Korea.

Thus, the North Korean case study reveals that UNPIK's ability to conduct UAR was less dependent upon civilian sympathy than was the case with DET 101 in Burma, but that their unique geographic position, as supplemented by fire support, created a relatively secure DAR, with little or no Communist ability to counter UAR operations. A graphic representation of the controlled comparison of the variables in the North Korean case study, contrasting UNPIK with Baker Section and Task Force Kirkland, reflects the strong impact of all three variables upon successful UAR, keeping in mind the previously-mentioned caveat regarding civilian sympathy:

	Civilian Sympathy	Reaction Capability	Effective Search Den.	UAR Success
UNPIK	Yes	Limited	None in the DAR, initially limited on mainland	High
Baker Section	No	Effective	Extremely Effective	None
TF Kirkland	No	Effective	Effective	None noted

Figure 7. Controlled Comparison of Variables for UNPIK, Baker Section, and TF Kirkland.

Colonel Malcom, when questioned about whether UNPIK recovery missions were ever pre-planned to be at the proper location to support planned air operations, indicated that:

> The Air Force and the Navy carriers never informed us in advance of when or what targets they planned to hit, except in support of our raids. I believe we could do a much better job today of pre-positioning partisans to rescue our pilots because of the U.S. Army's understanding of Special Forces, Unconventional Warfare, and better communication and coordination of targeting with the other services. (Malcom, personal communications, 31 AUG 01)

Obviously, then, UNPIK operations, while closely resembling the current concept of UAR, did not demonstrate the prior coordination and singular mission focus envisioned today. The UNPIK case does demonstrate the importance of denying the enemy the ability to move freely in the DAR, especially when his treatment of prisoners is an issue of concern. In 1952, two C-47 pilots, Downey and Fecteau, were shot down and captured by the Chinese. They were not released until twenty years later, in 1972 (Malcom, personal communications, 8 NOV 01). Prior coordination, and the timely placement of a UART, might have prevented this and other tragedies.

VI. QUANTITATIVE ANALYSIS: SURVIVAL CIRCULATION SIMULATION

A. EXPLANATION OF THE MODEL

The CBI and North Korean case studies demonstrate the overarching importance of civilian sympathy, enemy reaction capability, and enemy effective search density in determining the success or failure of UAR activities. Military planning, particularly special operations planning, regularly considers these three variables. For example, a specific mission analysis might conclude that 40% of the local population is sympathetic to the U.S., that enemy reaction time could be as short as 30 minutes, and that the enemy is likely to respond with up to an infantry company. What traditional mission analysis lacks, however, is a means by which to consider such facts in a combined, rather an independent, manner. How might civilian sympathy detract from or contribute to the enemy's reaction capability or search effectiveness? How might the enemy's reaction capability increase or decrease their search effectiveness? Most importantly, how do all three of these variables, combined, affect the likelihood of mission success, and at what point do any one of the three variables become an obstacle that cannot be overcome, regardless of the remaining two variables?

To answer these questions, I developed a mathematical simulation (See Appendix A). Using Minitab statistical analysis software, I developed a model that would:

1. Pit a large number of UARTs against all statistical possibilities.
2. Randomly calculate the impact of each variable upon all succeeding variables.
3. Randomly determine whether or not each UART avoided the negative consequences of each variable.
4. Determine how many days each UART survived under any particular set of conditions.

Some clarification regarding the quantification of the variables is necessary at this point. It is not the intent of this thesis to determine exactly what conditions, for any of the variables, amount to any particular percentage used in the model. Such speculation is both beyond my expertise, and is likely, in any case, to be insufficient in any given individual, real-world scenario. Rather, for the purposes of this model, I simply assumed that there does indeed exist a range of possibilities for each of the three variables, from completely insufficient (0%) to completely sufficient (100%). For example, in an area completely devoid of civilian inhabitants or completely populated by friendly civilians,

the chance of UART compromise due to hostile civilian activity may be assumed to be zero. Conversely, performing UART in the midst an active and large enemy unit may be assumed to be completely prohibitive. In any event, I leave the quantification of any particular case to future and more competent modelers, or to the intelligence analysts and commanders facing the prospect of deploying a UART, and I simply offer a complete, analyzed range of possibilities as a result of this simulation.

To best explain the UART model, I offer the following analogy. Picture a large, dark, open room, such as a gymnasium or a sports arena. This is the DAR. Within this room, there is some number of civilians, who either stay in place or only move about for small distances. Some of these civilians are friendly, some are neutral, and some are hostile. The friendly civilians will warn the UART if they have seen the enemy, and will give the UART the last known location and direction of the enemy. They may also, if approached by the enemy, lie to him about whether or where they might have last seen the UART. The neutral civilians simply stand mute, refusing to say anything to anyone. The hostile civilians, if the UART encounters them, will move to the nearest enemy unit and inform them of the UART location at the time of the sighting. The enemy can move towards that location at a given speed and, once on site, can deploy a fixed number of troops in the sweep. The UART mission is to remain in the dark room, stay undetected by the enemy, wait for an IP to appear within the room, and then to move to his vicinity, locate him, and move him to the door of the room. As the IP goes out the door, the UART must remain in the room and await the appearance of the next IP.

After running numerous trials in this fashion, we can examine the results to determine several interesting points. First, we will want to examine where the 'breakpoints' occur; that is, at what point along the quantitative scale for any of the variables does mission success drop off rapidly? This observation is even more poignant if we should discover a non-linear relationship, whereby the odds of success do not merely decline, via a straight line, but instead noticeably veers towards zero. Secondly, we will want to examine how many days each UART survived under each given permutation of conditions, in order to determine if one of the three variables plays a larger role than the others in determining UART success.

Finally, regarding the modeling techniques used for this simulation, it should be noted that, as with all probabilistic modeling, the Monte Carlo process used here generates reliable data only as a result of a large number of trials. As such, it may be wholly unreliable as a predictive tool for a single mission, as this individual mission in question may just very well be the one that fails to pass a relatively easy probability test at some point. However, it is my firm belief that, at a minimum, such a probabilistic model may offer some insight above and beyond mere human intuition and the unfocused consideration of disparate facts.

B. EXPLANATION OF THE SIMULATION PROCESS

Within the Minitab simulation, each UART going into the DAR faced a fixed set of conditions, for instance, a 40% chance of detection by hostile civilians, an enemy reaction capability rated at 20%, and an enemy effective search density of 60%. Each of the percentages used in this model equate to the chance of detection per day, regardless of specific UART activity, since, as defined earlier, UART success should not be dependent upon the uncontrolled and unknowable occurrence of whether or not an IP may ever appear, but must be limited to whether the UART is simply able to sustain and survive within the DAR until their presence there is no longer required. Thus, within the simulation on day one, a random number is generated to determine whether hostile civilians detect the UART. If they pass the bar of this obstacle, a second and third random number is generated to determine whether regular enemy activity, represented by reaction capability and, subsequently, search density, results in UART compromise. If they pass these next two bars, the UART has survived for one day and moves into day two to face the same three obstacles again. If, however, detection by hostile civilians does occur, two additional random numbers are generated: one to determine the increased effect upon enemy mobility, and one to determine the increased effect upon enemy search capability. The intent with these two random number generations is to simulate the effects of civilian notification upon enemy capabilities. The hostile civilian in question may give the enemy highly inaccurate information, or may deliver it far too late to do any good for the enemy, resulting in no increase in enemy capabilities, or he may give highly accurate information resulting in greatly increased capability. Additionally, if the enemy reacts quickly and appropriately to a UART sighting, whether

the sighting stems from civilian or enemy observation, there is an subsequent random increase in effective search density. Conversely, in the case of action by friendly civilians, the enemy's reaction capability and search density are decreased by a random amount, in order to simulate the unpredictable effects of such information to the UART or disinformation to the enemy. It should be mentioned at this point that one of the inherent assumptions of this model is that while the three variables may randomly impact upon one another during the course of a single day, the variables reset to their baseline percentages at the start of the following day and, in fact, remain constant throughout the duration of any single UART mission. While this may not be a perfect representation of reality, as the conditions represented by the variables would surely vary over the course of a UART mission, the possible number of permutations over the course of even two days are both staggering and beyond the scope of this modeler's skills. By keeping the baseline conditions fixed throughout the simulation and generating the full range of statistical possibilities, however, a reassessment of the conditions on the ground that indicates a significant shift in probabilities for any one variable can be resolved by simply moving to the results generated for that set of conditions.

Thus, within the simulation, UART #1 faces the three fixed variables (hostile civilian 20%, enemy reaction capability 20%, and enemy effective search density 20%), continuing until it fails. UART #2 then faces the same set of conditions, and so on, until 500 UARTs have faced these same three fixed variables. Next, the final variable, effective search density is increased to 40%, and another 500 UARTs face this set of conditions (20%, 20%, 40%). Effective search density continues to increase until it reaches 80%, whereupon it resets to 20% and enemy reaction capability is increased to 40%. Search density is then again ranged from 20% to 80%, after which reaction capability increases to 60%. Once reaction capability reaches 80%, civilian sympathy increases to 40%, and the pattern repeats again until we finally reach the maximum sets of possibilities, with civilian sympathy at 80%, reaction capability at 80%, and search density at 80%. At each point along each mission where the UART fails the probability associated with either civilian sympathy or enemy reaction capability, a random impact is generated upon (a) reaction capability and search density or (b) only search density, respectively. A second variation of the program, in which some portion of the civilians

are friendly to the UART, produces the same range of possibilities, but in this second simulation the actions of the civilians adversely impact the enemy's reaction capabilities and search densities.

C. ANALYSIS AND CONCLUSIONS

The Minitab simulation produced two important results for each possible set of conditions. First, it indicated the mean, or average, number of days survived that could be expected based on the results of 500 trials. Next, it indicated the maximum number of days survived by the longest-lived UART. Overall, the results were sobering. Even in the best of cases, when 80% of the civilians were friendly towards the UART and the enemy's reaction capability and effective search density were both only 20%, the mean number of days survived was 11.738 days, while the maximum number of days survived was 89. Over the range of all possibilities for all variables in which the civilians were friendly to some degree, the mean number of days survived was 1.944 days; in the case of hostile civilians, it fell to .2713, or less than one day (See Appendix B). In each of the sets of statistical possibilities, one or more UARTs did not survive beyond the first day. This was due in some small part to the incredibly rapid reaction capabilities and high search densities experienced over the range of scenarios. Even without the random impact of each variable upon the subsequent variables, stochastic evaluation shows us that when a UART is facing all three variables at the .80 level, it can be expected, on average, to survive for only 2 days. Additionally, it should be recalled that under the constraints of the model, neither the UART nor any supporting agency was able to do anything to affect the baseline percentages of any of the variables. The mere fact that UAR will most likely be conducted in support of a bombing campaign would indicate some significant level of disruption of the enemy's rear area security, and a resulting increase in UART survivability.

While the survival period of the UARTs in the simulation was less than encouraging, further analysis revealed the truly important lesson to be learned from this quantitative exercise. As noted earlier, SOF planners generally always consider such factors as civilians in the area of operations, the enemy's reaction capability, and the likely size of force the enemy with which the enemy can respond. As noted, though, there is no logical tool by which to determine how these three variables may interact to

affect mission success. This simulation, and the model it is based upon, provides one such tool, although others are surely possible. The primary lesson learned from this model is that, given the dictated relationships among the variables, regression analysis of the results demonstrates that, of the three variables, it was the enemy's search density that was the best indicator of whether a mission would succeed or fail. This primary factor was followed in importance by the actions of the sympathetic or hostile civilians, with the enemy's reaction capability ranking as the least important indicator. Looking back to the case studies, this priority of factors seems to make sense. In the case of DET 101 in Burma, the Japanese were usually able to do no more than harass DET 101 elements after they had executed their primary mission, largely due to the fact that the locals provided some warning or assistance. While the Japanese may have reacted in time, they were not regularly able to mass enough troops to overcome and annihilate a DET 101 unit. The same was generally true of UNPIK operations in North Korea, with the added angle that, in the case of recovery operations in the sea or on the islands, the Communists were not able to effect an interdiction with mass formations in this maritime environment.

All of the above indicates that those writing doctrine for UAR or actually planning to execute UAR should, in order of priority,

1. develop means by which to avoid or disrupt the enemy's ability to mass troops against the UART;
2. provide for reliable, micro-demographic intelligence regarding the sympathies of the local civilians and means by which to sway their allegiance away from the enemy;
3. and, lastly, degrade the enemy's mobility or ensure that the UART can sustain a relatively higher degree of mobility.

Each of these considerations will be further addressed in Chapter VI.

Few mathematical simulations can claim to reliably replicate the unpredictability of human behavior. In the case of the model used here, the action of civilians favoring either the UART or the enemy had a random positive or negative effect, respectively. Likewise, the enemy's ability to react to a sighting of the UART had a random positive effect upon the enemy's ability to mount an effective search. Hopefully, the findings of this thesis, as a first step towards the historical and scientific analysis of UAR, will lead to further research by those with more skill and experience in the areas of sociology and complex military modeling, specifically with regards to the probability and associated

effects of civilian assistance or compromise, the effects of reaction capability upon search effectiveness, and the effects of supporting friendly operations, such as a strategic bombing campaign, upon the enemy's rear area security.

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VII. DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

A. UAR & DOCTRINE

In his article on UAR doctrine in the magazine "Special Warfare", SSG Michael McCrann correctly notes that unconventional recovery can occur in many different forms, most of which do not necessarily involve a UART employed solely to recover IP (McCrann, pp. 6-9). SOF forces performing direct action (DA), special reconnaissance (SR), or unconventional warfare (UW) are, if the need arises, likely to be directed to perform unconventional recovery. However, the focus of the SOCCENT UWWG, as well as the goals of the 1st Battalion, 3rd Special Forces Group (1/3 SFG) UAR training program during my tenure as the Battalion Plans Officer, leaned more towards the concept of an SF team trained for UAR as its primary mission. For UAR to offer more than the chance of recovery due to the good fortune of happening to have a SOF unit in the vicinity of an IP, a UART, in its ultimate form, should be pre-positioned in a DAR where IP are likely, but where CSAR is impossible, and should have previously trained in the skill set unique to UAR and prepared to sustain itself for an indeterminate period of time. In 1/3 SFG, our initial training standard for UART self-sustainment was thirty days. It is unlikely that a SOF unit tasked to divert from DA or SR in order to perform UAR would be able to sustain itself for this long without conducting re-supply, thereby increasing its operational signature. The initial UAR training exercises I observed indicated that future UAR doctrine should allow for UAR to be a primary mission essential task for a team designated in its mission letter to perform UW. McCrann indicates the same recognition of the relationship between UAR and UW in his article when he notes that,

> The military aspect of UAR is classic UW, for which U.S. Army SF are specifically trained, organized, and equipped. In fact, SF are the only DoD forces with the primary mission of planning and conducting UW. SF possess several capabilities required for UAR: an understanding of UW theory and insurgent tactics; language proficiency; area and cultural orientation; small-unit tactical skills; knowledge of clandestine operations; and communication skill. (McCrann, p. 9)

For UAR to be performed as other than an opportune collateral activity, a UW SFODA should have an intimate familiarity with one or more specific DARs and its

associated indigenous population and enemy order of battle; previous experience with the personnel or vehicle loads necessary for sustained UAR; a high degree of experience across the unit in the skills required to interact with evasion mechanisms; and familiarity with some of the technical means likely to be used to authenticate recovered IP.

Whether as a primary mission or a collateral activity, UAR is a mission that, regardless even of the initial analysis and insight offered by this thesis, will likely remain problematic for SOF commanders and mission planners. In almost every other case of SOF employment, from special reconnaissance to direct action to unconventional warfare, more solid conclusions can be reached regarding the strategic value of the mission objective and the calculations regarding whether that objective is worth the risks implicit in the employment of SOF forces, simply because the objective is a concrete reality before the mission occurs. UAR, in aiming to recover IP, may, even if successfully executed, be determined at the end of the conflict to have contributed little to the strategic outcome. Worse yet, SOF forces deployed to conduct UAR may be put at risk or may be lost in an attempt to recover potential IP who, due to overestimation of the enemy's ability to shoot down U.S. aircraft, superior performance on the part of U.S. aircrews, or mere luck, may never be in need of recovery. Short of full-scale, attrition-based conventional conflict of long duration against a peer military competitor, the return of IP to friendly control is not likely, of itself, to directly contribute to the strategic military outcome. However, such cool calculations of strategic gain may not be the best means by which to evaluate the usefulness of UAR during contemporary hostilities. As noted by McCrann,

> As our country's military capabilities are increasingly employed in military operations other than war, or MOOTW, failure to recover United States personnel lost during these operations can have profound consequences on the political-military situation. (McCrann, p.2)

Given the current asymmetric conflict against Al Qaeda, and the strong likelihood of similar related and unrelated asymmetric conflict in the future, we cannot ignore the political and morale advantages to be gained from UAR. Asymmetric opponents deliberately target our more conventional vulnerabilities, one of which is the perception, whether valid or not, of sensitivity on the part of the American politicians and public to the captivity and mistreatment of our service members. According to one SOF officer

who was involved in the recovery of the F-117 pilot shot down in Serbia, such considerations cannot be taken lightly. Following the successful recovery of this F-117 pilot, President Clinton telephoned the headquarters responsible for the rescue and informed them that,

> You guys saved our [expletive deleted], if they [the Serbs] had captured that pilot and paraded him through Belgrade, it would have been game over [our offensive military efforts would have had to cease]. (President Clinton, as paraphrased by Colonel Dietrick, 22 AUG 01, personal communications)

Colonel Dietrick concluded from this statement that the risk to the recovery force was clearly outweighed by the higher political risk of even one captured American pilot. It requires no stretch of imagination to extend the same line of logic to the possibility of an American pilot shot down while operating against fanatical and unprincipled terrorist networks or their state supporters.

Ultimately, however, justification of the need for UAR becomes moot when one considers Department of Defense Instruction 2310.6, dated October 13, 2000 (DoDI 2310.6). This instruction

> implements personnel recovery policy, assigns responsibilities, and prescribes procedures under reference (a) [DoD Directive 2310.2 "Personnel Recovery," June 30, 1997] to develop and execute Non-conventional Assisted Recovery (NAR) procedures for U.S. military personnel, DoD civilian employees, contractors and other designated personnel isolated during military operations or as a direct result of developing or ongoing crisis prior to U.S. military intervention. (DoDI 2310.6, p. 1)

DoDI 2310.6 explicitly directs the Commander in Chief, United States Special Operations Command, to develop SOF strategy, doctrine, tactics, techniques, and procedures for NAR (DoDI 2310.6, p. 6). Given the aforementioned increased difficulties in determining a proper context for evaluating the costs and benefits of actually executing UAR, this doctrine should go beyond current SOF doctrine for other mission profiles in what it offers as guidelines for evaluating mission feasibility. This thesis, based on the case studies, points out the importance of considering civilian sympathy, enemy reaction capability, and enemy search density in an interactive fashion, as well as offering, by way of mathematical simulation, a way to think about how to

study the interactive and multiplicative effects of these variables upon each other and upon UAR feasibility. It is not suggested here that the findings of this thesis are authoritative, or that SOF doctrine writers should not consider other possible factors. At a minimum, however, this thesis indicates that careful consideration should be given to what unique factors and risks should be analyzed, as well as how they should be analyzed, when preparing for UAR, and what assets might be committed to increase a UART's odds of survival and mission success.

B. INFLUENCING UAR FEASIBILITY

As noted in Chapter V, the case studies and the simulation suggest that some of the most beneficial methods to influence UAR feasibility are to avoid or disrupt the enemy's massed search forces, to have an in-depth understanding of the sympathies of the local civilians, and to degrade the enemy's mobility. To roughly categorize these capabilities into two categories, we can think of the means by which to achieve them as falling into the realms of either information or supporting firepower. Sufficient information can make clear to UAR planners whether operations in a particular DAR are feasible or not, can indicate what additional measures might need to be taken to increase UART survivability, and can aid a UART during execution in avoiding situations that would lead to mission abort or failure. When information is insufficient during execution, a UART could augment its survivability through supporting firepower. As noted earlier, UAR is likely, though not certain, to be conducted in support of other operations that may produce a significant number of IP. It has been the assumption of this thesis that this will generally take the form of a U.S. bombing campaign. Logically, then, UAR doctrine should indicate the importance of coordination between the UAR planners and the supported aviation units to ensure that some portion of sorties allocated to the target sets within the DAR are available for emergency close air support (ECAS), and that the frequencies and call signs of sorties entering the DAR are passed to the UART. Additionally, some portion of those aircraft on strip alert should be dedicated to ECAS in support of UAR, since the UART is in the DAR to recover those very same pilots or their comrades.

To return to the analogy of Chapter V and the category of information, let us imagine a spotter in the rafters of the large, dark arena with night vision and a radio

through which he could communicate directly with the UART. A UART with sufficient intelligence available during mission analysis, and a link for continuous updates during execution, could presumably avoid contact with all civilians and enemy. In reality, this would call for the dedication of strategic reconnaissance assets to UAR in order to provide continuous coverage and, ideally, a direct link to the UART, or at least a link with few middlemen and little time delay. Both national and strategic reconnaissance assets are valuable, and are not likely to be readily diverted from supporting the main fight to supporting recovery operations. SOF policy and doctrine writers, however, should do all that is possible to ensure some minimal degree of continuous overhead surveillance in support of UAR. Lacking this continuous overhead surveillance, the UART will have to resort to supporting firepower, which, while beneficial, can inadvertently draw unwanted attention to the fact that a U.S. unit is loose in the enemy's rear area.

Sadly, for the UART, there is no technology that can remotely detect human intent. Thus, despite whatever information might be available in area studies or other sources of intelligence regarding the degree and direction of indigenous sympathy, each encounter with civilians is a cause for alarm, as there is no way to tell what that person may eventually do once they wander away after having observed the UART. As with most SOF missions, the UART would be in no position to detain each civilian they encounter, and would be forced to react as if a compromise was likely. As a result, the UART would incur the obligation to move when it might not have to, thus increasing the chances of leaving increased signature or inadvertently encountering an enemy patrol. All of this only serves to reinforce the importance of information, and the apparent lack of detailed study regarding the interaction of civilians and the armed forces of regimes that the U.S. might face in conflict. Recall from the simulation that, in order to gain some visibility of the full range of possibilities, civilian sympathies, whether hostile or civilian, ranged from a low of 20% to a high of 80%. Other studies, however, indicate that the most likely scenario regarding civilians interacting with military forces is more complex. A study of seven historical resistance movements involving an active guerrilla force with a supporting underground, and in countries with populations ranging from 4.9 million to 41 million indicated that, on average, only 6% of the population was actively

involved in the conflict. This includes civilians, partisans, and the security forces of the regime (Molnar, pp. 15-16). As observed by Molnar,

> This leaves a large proportion of the populace who, for personal or other reasons, were not directly involved, and raises some interesting questions about the meaningfulness of referring to the 'people' in an undifferentiated manner. (Molnar, p. 16)

Molnar gives no indication as to what portion of this 6% included civilians who aided the government security forces, nor what impact their participation had upon the counter-regime forces. Once conflict begins or appears inevitable, there will be little opportunity to gather this type of detailed information; UAR doctrine should encourage ongoing analysis of the possible DARs to a level that exceeds the current SOF area study.

Numerous methods currently exist by which to influence civilians on the ground during mission execution. Blood chits and various psychological operations products all are designed to encourage assisting Americans behind enemy lines. SOF, particularly SF, is skilled at interacting with locals to win their loyalty. What may need further development, however, is the use of psychological tools to disrupt or delay the enemy search forces. It is widely accepted that most of our opponents utilize Americans new networks, primarily CNN, as a reliable source of up-to-date intelligence. Disinformation operations via these news mediums may offer an excellent opportunity to hinder enemy search efforts, if some prior preparations are in place. For example, a pre-recorded tape showing an American pilot getting off a helicopter and being greeted by medical personnel, which could potentially indicate a successful recovery, could assist in convincing the enemy that the pilot or UART they are searching for is no longer in their rear area.

In summary, as integrated air defenses continue to improve throughout the world, and as the political-military importance of denying the enemy the opportunity to exploit even one American service member continues to grow, the importance and likelihood of UAR can only increase. As noted in the 2000 Annual Defense Review:

> The directive on Personnel Recovery, June 30, 1997, states that bringing home those who have put themselves in harm's way is one of the highest priorities of the Department of Defense and a moral obligation. Current DoD efforts in this regard are focused on improving Personnel Recovery

capabilities for information management, critical communications links, evader location, and intelligence support. This year the Department also issued a revision to the original June 1997 DoD Directive on Personnel Recovery. This revision to the Department's first effort to provide policy oversight over personnel recovery matters, [sic] realigns DoD executive agency for recovery from the Air Force to Joint Forces Command, thus reinforcing the joint nature of recovery operations and emphasizing the need for all Services, not just the Air Force, to maintain a robust recovery capability. (OSD, p. 126)

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APPENDIX A. MINITAB PROGRAMS

Program #1: Hostile Civilians

```
GMACRO
UARah
NAME C1 'INPUT CIV'
NAME C2 'RANDOM CIV'
NAME C3 'CIV EFFECT RC'
NAME C4 'CIV EFFECT SD'
NAME C5 'INPUT RC'
NAME C6 'RANDOM RC'
NAME C7 'RC EFFECT SD'
NAME C8 'INPUT SD'
NAME C9 'RANDOM SD'
NAME C10 'UART'
NAME C11 'CIV SYM'
NAME C12 'CIV COM'
NAME C13 'RC'
NAME C14 'FAILURE RC'
NAME C15 'SD'
NAME C16 'FAILURE SD'
NAME K1 'CHANCE CIV DET'
NAME K2 'UART DAYS'
NAME K3 'FIXED RC'
NAME K4 'MOD RC'
NAME K5 'FIXED SD'
NAME K6 'MOD SD'
LET C1=.2
LET C5=.2
LET C8=.2
LET K1=C1
LET K3=C5
LET K5=C8
MLABEL 1
DO K10=1:500
LET K2=0
MLABEL 2
LET C3=0
LET C4=0
LET C7=0
RANDOM 1 C2;
        UNIFORM 0 1.
IF C2>K1
        GOTO 3
ENDIF
```

```
IF C2=K1
        GOTO 3
ENDIF
IF C2<K1
        LET C10(K10)=K10
        LET C11(K10)=K1
        LET C12(K10)=K2
        RANDOM 1 C3;
                UNIFORM 0 1.
        RANDOM 1 C4;
                UNIFORM 0 1.
        GOTO 3
ENDIF
MLABEL 3
RANDOM 1 C6;
        UNIFORM 0 1.
LET K4=C6-C3
IF K4>K3
        GOTO 4
ENDIF
IF K4=K3
        GOTO 4
ENDIF
IF K4<K3
        LET C10(K10)=K10
        LET C13(K10)=K3
        LET C14(K10)=K2
        RANDOM 1 C7;
                UNIFORM 0 1.
        GOTO 4
ENDIF
MLABEL 4
RANDOM 1 C9;
        UNIFORM 0 1.
LET K6=C9-C7-C4
IF K6>K5
        LET K2=K2+1
        GOTO 2
ENDIF
IF K6=K5
        LET K2=K2+1
        GOTO 2
ENDIF
IF K6<K5
        LET C10(K10)=K10
        LET C15(K10)=K5
```

```
        LET C16(K10)=K2
ENDIF
MLABEL 5
ENDDO
PRINT K1
PRINT K3
PRINT K5
DESCRIBE C12
DESCRIBE C14
DESCRIBE C16
MLABEL 6
LET K5=K5+.2
IF K5=1
        LET K5=.2
        GOTO 7
ENDIF
GOTO 1
MLABEL 7
LET K3=K3+.2
IF K3=1
        LET K3=.2
        GOTO 8
ENDIF
GOTO 1
MLABEL 8
LET K1=K1+.2
IF K1=1
        GOTO 9
ENDIF
GOTO 1
MLABEL 9
ENDMACRO
```

Program #2: Friendly Civilians

```
GMACRO
UARaf
NAME C1 'INPUT CIV'
NAME C2 'RANDOM CIV'
NAME C3 'CIV EFFECT RC'
NAME C4 'CIV EFFECT SD'
NAME C5 'INPUT RC'
NAME C6 'RANDOM RC'
NAME C7 'RC EFFECT SD'
NAME C8 'INPUT SD'
NAME C9 'RANDOM SD'
NAME C10 'UART'
NAME C11 'CIV SYM'
NAME C12 'CIV ASST'
NAME C13 'RC'
NAME C14 'FAILURE RC'
NAME C15 'SD'
NAME C16 'FAILURE SD'
NAME K1 'CHANCE CIV ASST'
NAME K2 'UART DAYS'
NAME K3 'FIXED RC'
NAME K4 'MOD RC'
NAME K5 'FIXED SD'
NAME K6 'MOD SD'
LET C1=.2
LET C5=.2
LET C8=.2
LET K1=C1
LET K3=C5
LET K5=C8
MLABEL 1
DO K10=1:500
LET K2=0
MLABEL 2
LET C3=0
LET C4=0
LET C7=0
RANDOM 1 C2;
        UNIFORM 0 1.
IF C2>K1
        GOTO 3
ENDIF
```

```
IF C2=K1
        GOTO 3
ENDIF
IF C2<K1
        LET C10(K10)=K10
        LET C11(K10)=K1
        LET C12(K10)=K2
        RANDOM 1 C3;
                UNIFORM 0 1.
        RANDOM 1 C4;
                UNIFORM 0 1.
        GOTO 3
ENDIF
MLABEL 3
RANDOM 1 C6;
        UNIFORM 0 1.
LET K4=C6+C3
IF K4>K3
        GOTO 4
ENDIF
IF K4=K3
        GOTO 4
ENDIF
IF K4<K3
        LET C10(K10)=K10
        LET C13(K10)=K3
        LET C14(K10)=K2
        RANDOM 1 C7;
                UNIFORM 0 1.
        GOTO 4
ENDIF
MLABEL 4
RANDOM 1 C9;
        UNIFORM 0 1.
LET K6=C9-C7+C4
IF K6>K5
        LET K2=K2+1
        GOTO 2
ENDIF
IF K6=K5
        LET K2=K2+1
        GOTO 2
ENDIF
IF K6<K5
        LET C10(K10)=K10
        LET C15(K10)=K5
```

```
        LET C16(K10)=K2
ENDIF
MLABEL 5
ENDDO
PRINT K1
PRINT K3
PRINT K5
DESCRIBE C12
DESCRIBE C14
DESCRIBE C16
MLABEL 6
LET K5=K5+.2
IF K5=1
        LET K5=.2
        GOTO 7
ENDIF
GOTO 1
MLABEL 7
LET K3=K3+.2
IF K3=1
        LET K3=.2
        GOTO 8
ENDIF
GOTO 1
MLABEL 8
LET K1=K1+.2
IF K1=1
        GOTO 9
ENDIF
GOTO 1
MLABEL 9
ENDMACRO
```

APPENDIX B. SIMULATION RESULTS AND ANALYSIS

Range of Simulation Results:

Column A = Civilian Sympathy

Column B = Enemy Reaction Capability

Column C = Enemy Search Density

Column D=Mean Days Survived, Friendly civilians

Column E=Maximum Days Survived, Friendly civilians

Column F=Mean Days Survived, Hostile civilians

Column G=Maximum Days Survived, Hostile civilians

A	B	C	D	E	F	G
0.2	0.2	0.2	3.166	31	1.512	15
0.2	0.2	0.4	1.430	12	0.688	5
0.2	0.2	0.6	0.676	7	0.386	5
0.2	0.2	0.8	0.396	6	0.152	3
0.2	0.4	0.2	1.998	13	1.056	9
0.2	0.4	0.4	1.152	11	0.484	4
0.2	0.4	0.6	0.572	5	0.258	3
0.2	0.4	0.8	0.288	3	0.106	3
0.2	0.6	0.2	1.534	13	0.738	12
0.2	0.6	0.4	0.762	8	0.386	4
0.2	0.6	0.6	0.438	4	0.162	3
0.2	0.6	0.8	0.226	3	0.082	2
0.2	0.8	0.2	1.178	8	0.534	6
0.2	0.8	0.4	0.600	8	0.318	6
0.2	0.8	0.6	0.342	5	0.140	3
0.2	0.8	0.8	0.208	3	0.054	2
0.4	0.2	0.2	4.194	34	0.900	8
0.4	0.2	0.4	2.228	15	0.520	6
0.4	0.2	0.6	1.072	9	0.316	3
0.4	0.2	0.8	0.614	6	0.102	2
0.4	0.4	0.2	2.886	19	0.782	10

A	B	C	D	E	F	G
0.4	0.4	0.4	1.616	14	0.402	4
0.4	0.4	0.6	0.966	8	0.238	4
0.4	0.4	0.8	0.486	6	0.084	2
0.4	0.6	0.2	2.022	20	0.546	6
0.4	0.6	0.4	1.276	14	0.302	4
0.4	0.6	0.6	0.782	8	0.132	3
0.4	0.6	0.8	0.464	5	0.062	2
0.4	0.8	0.2	1.524	12	0.424	8
0.4	0.8	0.4	0.930	8	0.238	4
0.4	0.8	0.6	0.528	8	0.068	2
0.4	0.8	0.8	0.348	3	0.030	2
0.6	0.2	0.2	5.884	40	0.556	8
0.6	0.2	0.4	3.098	19	0.360	7
0.6	0.2	0.6	1.790	15	0.146	3
0.6	0.2	0.8	0.902	10	0.076	2
0.6	0.4	0.2	4.494	24	0.476	7
0.6	0.4	0.4	2.284	16	0.272	4
0.6	0.4	0.6	1.434	12	0.120	2
0.6	0.4	0.8	0.772	10	0.066	3
0.6	0.6	0.2	3.356	17	0.364	5
0.6	0.6	0.4	1.906	15	0.214	5
0.6	0.6	0.6	1.112	8	0.080	2
0.6	0.6	0.8	0.676	7	0.030	1
0.6	0.8	0.2	2.194	19	0.284	4
0.6	0.8	0.4	1.350	11	0.130	3
0.6	0.8	0.6	0.962	11	0.062	1
0.6	0.8	0.8	0.538	8	0.024	1
0.8	0.2	0.2	11.738	89	0.332	4
0.8	0.2	0.4	5.052	34	0.192	2
0.8	0.2	0.6	2.594	18	0.094	2

A	B	C	D	E	F	G
0.8	0.2	0.8	1.330	17	0.046	1
0.8	0.4	0.2	7.560	64	0.304	3
0.8	0.4	0.4	3.878	27	0.154	2
0.8	0.4	0.6	2.232	24	0.064	2
0.8	0.4	0.8	1.116	13	0.036	2
0.8	0.6	0.2	5.010	32	0.214	3
0.8	0.6	0.4	3.122	22	0.096	2
0.8	0.6	0.6	1.636	15	0.052	2
0.8	0.6	0.8	1.076	11	0.010	1
0.8	0.8	0.2	3.978	31	0.196	5
0.8	0.8	0.4	2.306	22	0.076	4
0.8	0.8	0.6	1.260	9	0.026	2
0.8	0.8	0.8	0.868	7	0.006	1

Regression Analysis: Mean Days Survived (Friendly civilians) versus Civilian Sympathy

```
The regression equation is
MDS, FR = - 0.090 + 4.07 CS

Predictor        Coef     SE Coef          T        P
Constant      -0.0902      0.5334      -0.17    0.866
CS             4.0683      0.9738       4.18    0.000

S = 1.742       R-Sq = 22.0%     R-Sq(adj) = 20.7%

Analysis of Variance

Source            DF          SS          MS         F        P
Regression         1      52.964      52.964     17.45    0.000
Residual Error    62     188.139       3.034
Total             63     241.102

Unusual Observations
Obs         CS    MDS, FR         Fit      SE Fit    Residual    St Resid
 33      0.600      5.884       2.351       0.239       3.533        2.05R
 49      0.800     11.738       3.164       0.364       8.574        5.03R
 53      0.800      7.560       3.164       0.364       4.396        2.58R

R denotes an observation with a large standardized residual
```

Regression Analysis: Mean Days Survived (Friendly civilians) versus Enemy Reaction Capability

```
The regression equation is
MDS, FR = 3.34 - 2.80 ERC

Predictor        Coef     SE Coef          T        P
Constant       3.3421      0.5716       5.85    0.000
ERC            -2.796       1.044      -2.68    0.009

S = 1.867       R-Sq = 10.4%     R-Sq(adj) = 8.9%

Analysis of Variance

Source            DF          SS          MS         F        P
Regression         1      25.024      25.024      7.18    0.009
Residual Error    62     216.078       3.485
Total             63     241.102

Unusual Observations
Obs        ERC    MDS, FR         Fit      SE Fit    Residual    St Resid
 49      0.200     11.738       2.783       0.390       8.955        4.91R
 53      0.400      7.560       2.224       0.256       5.336        2.89R

R denotes an observation with a large standardized residual
```

Regression Analysis: Mean Days Survived (Friendly civilians) versus Enemy Search Density

```
The regression equation is
MDS, FR = 4.63 - 5.37 ESD

Predictor        Coef     SE Coef          T        P
Constant       4.6286      0.4744       9.76    0.000
ESD           -5.3693      0.8662      -6.20    0.000

S = 1.549       R-Sq = 38.3%     R-Sq(adj) = 37.3%

Analysis of Variance

Source            DF          SS          MS         F        P
Regression         1      92.254      92.254     38.43    0.000
Residual Error    62     148.848       2.401
Total             63     241.102

Unusual Observations
Obs        ESD    MDS, FR         Fit      SE Fit    Residual    St Resid
 49      0.200     11.738       3.555       0.324       8.183        5.40R
 53      0.200      7.560       3.555       0.324       4.005        2.64R

R denotes an observation with a large standardized residual
```

Regression Analysis: Mean Days Survived (Hostile civilians) versus Civilian Sympathy

```
The regression equation is
MDS, HO C = 0.543 - 0.543 CS

Predictor        Coef     SE Coef          T        P
Constant      0.54250     0.07756       6.99    0.000
CS            -0.5425      0.1416      -3.83    0.000

S = 0.2533      R-Sq = 19.1%     R-Sq(adj) = 17.8%

Analysis of Variance

Source            DF          SS          MS         F        P
Regression         1     0.94178     0.94178     14.68    0.000
Residual Error    62     3.97852     0.06417
Total             63     4.92030

Unusual Observations
Obs         CS    MDS, HO         Fit      SE Fit    Residual    St Resid
  1      0.200     1.5120      0.4340      0.0530      1.0780        4.35R
  5      0.200     1.0560      0.4340      0.0530      0.6220        2.51R
 17      0.400     0.9000      0.3255      0.0347      0.5745        2.29R

R denotes an observation with a large standardized residual
```

Regression Analysis: Mean Days Survived (Hostile civilians) versus Enemy Reaction Capability

```
The regression equation is
MDS, HO C = 0.470 - 0.398 ERC

Predictor        Coef     SE Coef          T        P
Constant      0.47025     0.08169       5.76    0.000
ERC           -0.3980      0.1491      -2.67    0.010

S = 0.2668      R-Sq = 10.3%     R-Sq(adj) = 8.9%

Analysis of Variance

Source            DF          SS          MS         F        P
Regression         1     0.50689     0.50689      7.12    0.010
Residual Error    62     4.41341     0.07118
Total             63     4.92030

Unusual Observations
Obs        ERC    MDS, HO         Fit      SE Fit    Residual    St Resid
  1      0.200     1.5120      0.3907      0.0558      1.1213        4.30R
  5      0.400     1.0560      0.3111      0.0365      0.7449        2.82R

R denotes an observation with a large standardized residual
```

Regression Analysis: Mean Days Survived (Hostile civilians) versus Enemy Search Density

The regression equation is
MDS, HO C = 0.697 - 0.851 ESD

Predictor	Coef	SE Coef	T	P
Constant	0.69694	0.06271	11.11	0.000
ESD	-0.8514	0.1145	-7.44	0.000

S = 0.2048 R-Sq = 47.1% R-Sq(adj) = 46.3%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	2.3195	2.3195	55.29	0.000
Residual Error	62	2.6008	0.0419		
Total	63	4.9203			

Unusual Observations

Obs	ESD	MDS, HO	Fit	SE Fit	Residual	St Resid
1	0.200	1.5120	0.5267	0.0428	0.9853	4.92R
5	0.200	1.0560	0.5267	0.0428	0.5293	2.64R

R denotes an observation with a large standardized residual

Analysis of the Range of Simulation Results:

Descriptive Statistics: Mean Days Survived, Friendly civilians

Variable	N	Mean	Median	TrMean	StDev	SE Mean
MDS, FR	64	1.944	1.303	1.698	1.956	0.245

Variable	Minimum	Maximum	Q1	Q3
MDS, FR	0.208	11.738	0.698	2.301

Descriptive Statistics: Mean Days Survived, Hostile civilians

Variable	N	Mean	Median	TrMean	StDev	SE Mean
MDS, HO	64	0.2713	0.1770	0.2388	0.2795	0.0349

Variable	Minimum	Maximum	Q1	Q3
MDS, HO	0.0060	1.5120	0.0760	0.3805

LIST OF REFERENCES

Breuer, W. Shadow Warriors: The Covert War in Korea. New York: John Wiley & Sons, 1996.

Central Intelligence Agency. The World Factbook, 2001. Retrieved September 12, 2001 from the World Wide Web: http://www.odci.gov/cia/publications/factbook/index.html

Cleaver, F., et al. UN Partisan Warfare in Korea, 1951-1954. Study, Operations Research Office, Johns Hopkins University, 1956.

Dietrick, Col. Personal Communications. 22 AUG 01.

Evanhoe, E. Darkmoon: Eighth Army Special Operations in the Korean War. Annapolis, Md.: Naval Institute Press, 1995.

Evans, A. Combat Search & Rescue. London: Arms and Armour, 1999.

Fondecaro, S. A Strategic Analysis of U.S. Special Operations during the Korean Conflict, 1950-1953. U.S. Army Command and General Staff College, Fort Leavenworth, KS, 1988.

Haas, M. In the Devil's Shadow: UN Special Operations during the Korean War. Annapolis, Md.: Naval Institute Press, 2000.

Hogan, D. U.S. Army Special Operations in World War II. U.S. Army Center of Military History Publication 70-42, 1992. Retrieved August 22, 2001 from the World Wide Web: http://www.army.mil/cmh-pg/books/wwii/70-42/70-425.html

Joint Personnel Recovery Agency. "Introduction to Personnel Recovery". Ft. Belvoir, VA: United States Joint Forces Command, 1999.

Malcom, B. Personal Communications. 31 AUG 01.

Malcom, B. Personal Communications. 08 NOV 01.

Malcom, B. White Tigers: My Secret War in North Korea. Washington: Brassey's, 1996.

McCrann, M. "Unconventional Assisted Recovery: Providing the Doctrinal Framework." Special Warfare 12:2-11 Spring 1999.

Molnar, A., et al. Undergrounds in Insurgent, Revolutionary, and Resistance Warfare.

Washington: The American University Special Operations Research Office, 1963.

Moon, T. This Grim and Savage Game: OSS and the Beginning of U.S. Covert Operations in World War II. Los Angeles: Burning Gate Press, 1991.

Office of the Secretary of Defense. "Annual Defense Review." Washington, DC, 2000.

Office of the Secretary of Defense. "Department of Defense Directive 2310.2, Subject: Personnel Recovery." Washington, DC, 2000.

Office of the Secretary of Defense. "Department of Defense Instruction 2310.3, Subject: Personnel Recovery Response Cell (PRRC) Procedures." Washington, DC, 1997.

Office of the Secretary of Defense. "Department of Defense Instruction 2310.6, Subject: Non-Conventional Assisted Recovery in the Department of Defense." Washington, DC, 2000.

Schuetta, L. Guerrilla Warfare and Airpower in Korea, 1950-1953. Aerospace Studies Institute, Maxwell Air Force Base, AL, January 1964.

U.S. Army Forces, Far East, 8086 Army Unit (AFFE Military History Detachment). UN Partisan Forces in the Korean Conflict, 1951-1952 (A Study of Their Characteristics and Operations). Project MHD-3, Tokyo, March 1954.

U.S. Army John F. Kennedy Special Warfare Center and School. Publication 525-5-14, "Unconventional Assisted Recovery." Fort Bragg, NC, January 1999.

U.S. Army John F. Kennedy Special Warfare Center and School. "Unconventional Assisted Recovery Team Tactics, Techniques, and Procedures (TTP)". Fort Bragg, NC, 29 April 1999.

United States Joint Chiefs of Staff. Joint Pub 3-50.2: Doctrine for Joint Combat Search and Rescue. Washington, D.C.: GPO, 1996.

United States. Joint Chiefs of Staff. Joint Pub 3-50.21: Joint Tactics, Techniques, and Procedures for Combat Search and Rescue. Washington, D.C.: GPO, 1998.

United States. Joint Chiefs of Staff. Joint Pub 3-50.3: Joint Doctrine for Evasion and Recovery. Washington, D.C.: GPO, 1996.

United States War Dept. Strategic Services Unit. War Report of the OSS (Office of Strategic Services). New York: 1976.

BIBLIOGRAPHY

Gazit, S. "Risk, Glory, and the Rescue Operation." International Security, 6:1, 111-135, Summer 1981.

Giordano, F., Weir, M., and Fox, W. A First Course in Mathematical Modeling, 2nd Edition. New York: Brooks/Cole Publishing Company, 1997.

Holober, F. Raiders of the China Coast: CIA Covert Operations during the Korean War. Annapolis, MD: Naval Institute Press, 1999.

Hymoff, E. The OSS in World War II. New York: Ballantine Books, 1972.

Jackson, R. Air war over Korea. New York: Scribner, 1973.

Marshall, K. Studies in Attack Operations in Theater Missile Defense. Naval Postgraduate School: Institute for Joint Warfare Analysis, 1997.

McCrann, Michael. "Evasion and Escape: Special Operations Forces Are Invaluable for Dealing with Military Personnel Recovery." Armed Forces Journal International 137:108-110, September 1999.

Miles, M. A Different Kind of War: The Little-Known Story of the Combined Guerrilla Forces Created in China by the U.S. Navy and the Chinese During World War II. Garden City, NY: Doubleday, 1967.

Paschall, R. A Study in Command and Control: Special Operations in Korea, 1951-1953. Carlisle, PA: U.S. Army Military History Institute, June 1988.

Tilford, E. Search and Rescue in Southeast Asia. Washington, DC: Center for Air Force History, 1992.

Van Evera, S. Guide to Methods for Students of Political Science. Ithaca, NY: Cornell University Press, 1997.

Washburn, A. Search and Detection. Arlington, Va.: Military Applications Section, Operations Research Society of America, 1981.

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